Anamneza: povijest bolesti u antičkom svijetu

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ANAMNEZA
— POVIJEST BOLESTI U ANTIČKOM SVIJETU
~
ANAMNESIS
— MEDICAL HISTORY IN THE ANCIENT WORLD

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ARHEOLOŠKI MUZEJ U ZAGREBU

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PREDGOVOR
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PREFACE

SANJIN MIHELIĆ

Još od Sizifovih pseudoznanstvenih istraživanja, ljudskom je rodu čvrsto zadana granica preko koje mu ne valja ići u potrazi za besmrtnošću. Svidjelo nam se to ili ne, a većinom se svrstavamo u potonju skupinu, ipak nam je u sukobu s nadnaravnim na raspolaganju samo ograničen broj alata i metoda i to, pokazalo se, ograničene učinkovitosti. Čovjek, sada je već vjerojatno posve jasno, uistinu nikada neće pobijediti Smrt.

Povukavši se na pričuvnu poziciju, ljudi su se stali hrvati s protivnicima po svojoj mjeri: raznim ozljedama, oštećenjima te bolestima svake vrste. Od najranijih su vremena do današnjih dana sačuvani tragovi brojnih pomagala koja odražavaju standarde i dostignuća u čovjekovom ovladavanju medicinskim i farmaceutskim znanjima i vještinama. U doba antičkih civilizacija Grčke i Rima ove su discipline dosegle dotad nepoznate visine, a repertoar medicinskih instrumenata znatno se proširio, usporedo s upoznavanjem zakonitosti iz područja medicine, farmakologije, epidemiologije te srodnih znanosti.

Jednu veliku i reprezentativnu zbirku ovakvih pomagala iz antičkog doba čuva Arheološki muzej u Zagrebu. Javnosti ju je još prije tri i pol desetljeća na stručan način predstavio Zoran Gregl, u to vrijeme kustos, a danas muzejski savjetnik Arheološkog muzeja. Na tragu njegovih spoznaja te poslužívši se sadržajem zbirke, autori izložbe i kataloga, Slađana Latinović, Sunčica Nagradić Habus i Danijel Lončar pružili su nam priliku da sagledamo njezine najznačajnije dijelove, kontekstualizirane kroz različite aspekte fenomena medicine i ljekarništva tijekom antike. Kao znanost kojoj se neki odaju od rane mladosti, dok druge zaintrigira tek u zrelijoj dobi, onako, više silom prilika, medicina je oduvijek zaokupljala čovjekovu pažnju. Ovom izložbom, podsjetnikom na liječnike i ljekarnike iz davno minulih vremena, vjerujemo da će autori uspjeti zaokupiti i Vašu!

ZAGREB, OŽUJAK 2017.

SANJIN MIHELIĆ

Ever since the pseudo–scientific times of Sisyphus, human kind was limited in its search for immortality. Whether we like it or not, as a part of that group, we do have a finite set of tools and methods of limited effectiveness when dealing with the supernatural. Human kind is now facing the truth that has been coming for a long time — that it will never defeat Death.

Withdrawing to the background, people started grappling with opponents they could handle: various injuries, wounds, and diseases of all kind. Numerous traces of tools that reflect standards and achievements in our search to master medical and pharmaceutical knowledge and skills, dating to earliest periods, still survive today. During ancient Greece and Rome, these disciplines achieved previously unknown heights, and the inventory of medical instruments was significantly expanded following the development of medicine, pharmacy, public health and related disciplines.

One large and representative collection of Roman medical instruments can be found in the Archaeological museum in Zagreb. Three and a half decades ago, the Collection was presented to the public by Zoran Gregl, a curator at the time, and now a museum advisor at the Archaeological museum in Zagreb. Using his insights and the material found in the Collection, authors of the exhibition and the exhibition catalogue, Slađana Latinović, Sunčica Nagradić–Habus and Danijel Lončar, have presented us with an opportunity to appreciate its most important elements through various aspects of the phenomena of medicine and pharmacy in ancient times. As a science that some spend their whole life exploring, while others are intrigued by it in their maturity, mostly by force of circumstance, medicine has always demanded our attention. We believe that through this exhibition — a recognition of physicians and healers from a time long past — the authors will capture your attention!

ZAGREB, MARCH 2017.

UVOD
~
INTRODUCTION

U *Vjesniku Arheološkog muzeja u Zagrebu* (3. serija, XV, 1982) prije 35 je godina objavljen rad kustosa Zorana Gregla o zbirci medicinskih instrumenata iz fundusa Arheološkog muzeja u Zagrebu *Rimski medicinski instrumenti iz Hrvatske I*. To je ujedno bila i prva stručna objava ove vrste arheološkog materijala u Hrvatskoj.

U uvodnom dijelu autor donosi kratak pregled istraživanja povijesti medicine antičkog doba u regiji, navodeći pregled inventara i datacije, u to vrijeme poznatih liječničkih grobova. Pritom spominje, u tom trenutku novi i neobjavljeni, nalaz liječničkog groba. Iz emonskih nekropola izdvaja grobove u kojima su pronađeni medicinski instrumenti u funkciji kozmetičkog pribora. U drugom dijelu autor stručno i sustavno prikazuje presjek rimskog medicinskog instrumentarija iz Arheološkog muzeja u Zagrebu koji broji 613 predmeta. Sav obrađeni materijal potječe iz Siska, a zbog specifičnosti podrijetla nalaza — izvan zatvorenih arheoloških cjelina i konteksta (jaružanje Kupe, kupnja ili poklon) — autor je bio u mogućnosti materijal "samo" tipološki vrednovati.

Izdvojivši grupe najčešće zastupljenih instrumenata tzv. male kirurgije, Z. Gregl svakoj skupini predmeta, uz detaljan opis oblika instrumenta i mogućih varijacija, određuje i medicinsku funkciju te naglašava, gdje je to potrebno, njegovu višenamjensku vrijednost. Jasno ističe načine ukrašavanja, kao i materijale od kojih su instrumenti izrađeni, te iznosi ukupan broj predmeta unutar svake pojedine skupine. Unutar svake grupe instrumenata izdvaja nekoliko osnovnih i reprezentativnih predmeta, uz navođenje analogija, te ih objavljuje kao kataloške jedinice i prikazuje u crtežu ili fotografiji.

Ovom je objavom Z. Gregl pozicionirao sisačku kolekciju rimskih medicinskih instrumenata iz Arheološkog muzeja u Zagrebu na europsku arheološku kartu. Naime, kako sam autor navodi, kod rada na materijalu uspostavio je kontakt s Ernestom Künzlom. Obostrana suradnja vidi se iz zahvala E. Künzla upućenih suradnicima u djelu *Medizinische Instrumente aus Sepulkralfunden der römischen Kaiserzeit* iz 1983. godine, gdje navodi i Z. Gregla.

Sl. 1. Ušne sonde s ukrašenim držačem, dio Zbirke medicinskih i farmaceutskih instrumenata iz Siska. (Sisak, 1. – 4. st., K111b)
~ Fig. 1 Ear probes with decorated handles, Collection of Roman Medical and Pharmaceutical Instruments from Sisak. (Sisak, 1st – 4th c., K111b)

35 years ago, curator Zoran Gregl published the *Roman medical instruments from Croatia I* article in the *Bulletin of the Archaeological Museum in Zagreb* (Vjesnik Arheološkog muzeja u Zagrebu, 3rd series, XV, 1982). The article dealt with the collection of medical instruments from the Archaeological Museum in Zagreb. This was the first publication of this type of archaeological material in Croatia.

In the introduction, the author gave an overview of the research on the history of ancient medicine in the region, citing the inventory and dating the known physician's graves. He also mentioned a new and unpublished physician's grave. From the Emona necropolis, Gregl mentioned the graves with medical instruments that were used in cosmetics. In the second part of the article, the author systematically analysed the 613 Roman medical instruments from the Archaeological Museum in Zagreb. All the material came from Sisak, and due to the specific conditions regarding the discovery of the items – dredging of the Kupa River, purchase or gift without a clear archaeological context – the author was able to analyse the material "only" typologically.

By singling out the groups of most frequently used instruments for minimally invasive surgeries, Gregl gave each group a detailed description of the design of the

Iste godine Zoran Gregl u *Archaeologische Korrespondenzblatt* (Jahrgang 13, 1983. Heft 2, 2. Quartal) objavljuje još jedan nalaz rimskog medicinskog instrumenta iz Siska, jedinstvene sonde s pečatom "CARANTI", te rad *Rimski medicinski instrumenti iz Hrvatske II* u *Vjesniku Arheološkog muzeja u Zagrebu* (3. serija, XVI–XVII, 1983–1984) u kojem predlaže i moguće objašnjenje za veliki broj predmeta iz Siska, ostavljajući mogućnost da je Sisak bio radionički centar za proizvodnju medicinskih instrumenata.

Kvalitetu i važnost prvog sustavnog pregleda medicinskih instrumenata iz Arheološkog muzeja u Zagrebu potvrđuju kolege kojima je djelo, danas muzejskog savjetnika, dr. sc. Zorana Gregla i dalje osnovna stručna bibliografska jedinica za kojom posežu kada krenu u istraživanje antičkih medicinskih instrumenata na tlu Hrvatske, iako je prema skromnom navodu autora *[z]bog pomanjkanja sistematskih istraživanja, moguće sisačkі materijal (kojeg ima u izobilju) samo tipološki vrednovati.*

Tijekom godina rada, revizija, registracija i restauracija na različitim zbirkama Arheološkog muzeja u Zagrebu, broj se medicinskih instrumenata povećao jer dio nije bio prepoznat prilikom inventiranja (najčešće zbog njihove fragmentiranosti ili oštećenja uslijed korozijskih procesa) pa su zavedeni kao predmeti sa sasvim drugim funkcijama. Trenutačno se radi na registraciji Zbirke rimskih medicinskih i farmaceutskih instrumenata iz Siska koja u ovom trenutku broji 676 predmeta. Ako se tome pribroje i medicinski instrumenti s drugih lokaliteta, može reći da antički odjel Arheološkog muzeja u Zagrebu ima gotovo 700 antičkih medicinskih instrumenata, što je uistinu zavidna brojka.

Ova 35. obljetnica prve objave medicinskih instrumenata iz Arheološkog muzeja u Zagrebu, kao i priprema za registraciju Zbirke medicinskih instrumenata iz Siska, bila je poticaj za izložbu *Anamneza — povijest bolesti u antičkom svijetu* na kojoj se predstavlja dio antičkih medicinskih instrumenata iz zbirki Arheološkog muzeja u Zagrebu.

Kako je bolest sastavni dio ljudskog života, od najranijeg se vremena mogu pratiti pokušaji da je se objasni i da joj se odupre. Dugotrajan je to proces koji započinje magijskim i božanskim utjecajima na zdravlje ljudi, te u kojem, uz božanstva, glavnu ulogu pomagača pri ozdravljenju imaju svećenici, koji tumačeći volju bogova, sukladno tadašnjim svjetonazorima, ustvari predstavljaju prve "liječnike". Stoga se izložba otvara prikazom izabranih božanstva liječenja, kojima se pojedinac mogao obratiti u slučaju bolesti, kao što su Apolon, Asklepije, Higijeja i dr.

Razvojem filozofije i znanosti, uzroci bolesti, koje su u ranijem razdoblju bile shvaćane kao "božanska kazna", počinju se tražiti u prirodi ljudskog organizma. Takvo je poimanje početak formiranja medicine kao znanosti. Hipokratov način razmišljanja promijenio je iz temelja tadašnju medicinu i uspostavio je kao pravu znanstvenu disciplinu. Na njegovom tragu stoljećima ostaju brojni grčki i rimski liječnici. Kratak pregled tog značajnog procesa prikazan

instruments and their possible variations, determined their medical function, and where necessary, their multipurpose value. He described the type of decoration; materials used to make the instruments, and gave the total number of items in each group. Within each group, Gregl pointed out a few basic and representative instruments, indicating any analogies, and published them as catalogue entries with drawings and photographs.

With his article, Gregl put the collection of Roman medical instruments from Sisak on the European archaeological map. While working on the material, Gregl contacted Ernest Künzl. Their mutual cooperation is obvious since, in 1983, E. Kunz thanked his associates, including Zoran Gregl, in his work *Medizinische Instrumente aus der Sepulkralfunden römischen Kaiserzeit*.

That same year, Gregl published two articles. In the *Archaeologische Korrespondenzblatt* (Jahrgang 13, 1983, Heft 2, 2. Quartal), he published another Roman medical instrument from Sisak, a single probe with a manufacturers seal CARANTI. The other article, "*Roman medical instruments from Croatia II*", was published in the *Bulletin of the Archaeological Museum in Zagreb* (3rd series, XVI–XVII, 1983–1984), and proposed a possible explanation for the large number of items found in Sisak with the possibility that Roman Sisak was a production centre for medical instruments.

The quality and importance of the first systematic review of medical instruments from the Archaeological Museum in Zagreb is confirmed by colleagues who still use Gregl's (today a museum adviser) work when studying ancient medical instruments. However, the author modestly stated that "*because of the lack of good systematic research, it is possible to evaluate Sisak material (which is abundant) only typologically*".

During all the work, revisions, registration and restoration that has been done over the years on different collections in the Archaeological Museum in Zagreb, the number of medical instruments has increased because some items were classified as objects with completely different functions (usually due to their fragmentation or damage caused by corrosion). Currently, the 676 items of the collection of Roman medical and pharmaceutical instruments from Sisak are going through a process of registration. If we include the medical instruments from other sites, the Greek and Roman Collection of the Archaeological Museum in Zagreb has nearly 700 medical instruments from antiquity, a truly impressive figure.

The 35th anniversary of the first publication of medical instruments from the Archaeological Museum in Zagreb, as well as the registration of the collection, was the incentive for the exhibition *Anamnesis–Medical History in the Ancient World* that uses medical instruments taken from various collections of the Archaeological Museum in Zagreb.

Disease is an integral part of human life, and attempts to explain or escape it can be traced back to the dawn of time. It is a long process that began with magical and divine influences on human health. Alongside deities, the main role in recuperation belonged to priests who interpreted the will of the gods. In a way, these priests represent the first "physicians". Therefore, the exhibition opens with several healing deities that an individual could summon in case of illness, such as Apollo, Asclepius, Hygieia and others.

Through the development of philosophy and science, the human body became

je u drugoj izložbenoj prostoriji s naglaskom na to kako najpoznatiji antički liječnici doživljavaju ljudski organizam, što sve utječe na njega te kakav pristup liječnik treba imati prema bolesti i oboljelom.

Slijedeći Hipokratovu misao kako ljudsko tijelo ima mogućnost vratiti bolešću poljuljanu ravnotežu te kako je liječnikov zadatak usmjeriti pacijenta prema izlječenju, ulazi se u prostor posvećen farmaciji. Prikazom prikupljanja, pripreme i skladištenja sastojaka ukazuje se na niz ljekovitih pripravaka koji oboljelom stoje na raspolaganju, ako mu pravilna prehrana i dovoljno odmora nisu pomogli. Pri tome se služi različitim sirovinama koje su i danas u uporabi te alatima i posudama iz fundusa Arheološkog muzeja u Zagrebu.

Kao posljednji korak pri liječenju, onaj koji se primjenjuje samo kada je to neizbježno, navodi se nekoliko invazivnih zahvata. Izabrani su prema njihovoj učestalosti u antičko (prijelomi, ratne ozljede) ili današnje vrijeme (siva mrena, kamenci) te zanimljivosti samog postupka (trepanacija, venesekcija). U ovom dijelu postava izlaže se dio zbirke antičkih medicinskih instrumenata te njihove suvremene inačice. Kao potvrdu za dio prikazanih zahvata izlaže se i osteološki materijal s tragovima ozljeda ili zahvata koje upućuju na uspješno liječenje.

Put kojim se prati bolesnog pojedinca, završava se općom brigom za zdravlje i početkom razvoja osnovnih ideja koje danas čine javno zdravstvo, kao što su vodovod i kanalizacija. U svim navedenim prostorima osmišljeni su i edukativno–zabavni sadržaji za posjetitelje.

Obljetnica vezana uz Zbirku rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu veže se uz još dvije velike obljetnice, stotinu godina od osnutka Medicinskog fakulteta u Zagrebu i devedeset godina od osnutka Škole narodnog zdravlja "Andrija Štampar". Stoga smo u Arheološkom muzeju u Zagrebu tijekom travnja, svibnja i lipnja 2017. godine, za različite dobne skupine posjetitelja, pripremili niz radionica i popularno–znanstvenih predavanja na temu zdravlja.

the place where physicians looked for the cause of the disease (which was considered "divine punishment" in earlier periods). This line of reasoning is the beginning of medicine as a science. Hippocrates' way of thinking fundamentally changed ancient medicine and established it as a true scientific discipline. For centuries, numerous Greek and Roman physicians followed his teachings. A brief overview of this important process is shown in the second room of the exhibition focusing on how most famous ancient physicians perceived the human body, what affected it and how physicians approached illness and suffering.

Following the Hippocratic ideas that the human body has the ability to restore the balance shaken by the disease, and that it is the physician's responsibility to guide the patient towards healing, visitors enter the space dedicated to pharmacy. The process of collecting, preparing and storing ingredients indicate a number of medicinal remedies available to patients when proper diet and plenty of rest did not help. Visitors can see a variety of raw materials that are still used today, as well as tools and containers from the collection of the Archaeological Museum in Zagreb.

As the last step in the treatment, one that was applied only when there was nothing else to do, several invasive procedures are shown. They are selected according to their frequency in ancient times (fractures, war injuries) or today (cataracts, kidney stones), and the curiosity of the procedure (trepanning, bloodletting). In this section of the exhibition, part of the collection of medical instruments from antiquity and their modern versions are displayed. To illustrate the procedures, osteological material with traces of injuries or surgery that suggest successful treatment is displayed.

The path followed by the patient, ends with the general concern for health and the early development of basic ideas that constitute public health today, such as water supply and sewage systems. In all exhibition areas, there are educational and entertainment points for visitors.

The 35th anniversary of the collection of Roman medical and pharmaceutical instruments from Sisak in the Archaeological Museum in Zagreb is connected with two major anniversaries. A hundred years of the Medical School in Zagreb and ninety years of the Andrija Štampar School of Public Health. During April, May and June 2017, the Archaeological Museum in Zagreb has prepared a series of workshops and lectures on health for different age groups.

MEDICINA U PRAPOVIJESTI
~
PREHISTORIC MEDICINE

Da bi se opisali počeci medicine treba otići daleko u ljudsku prošlost, prije nego što se medicina javlja kao znanstvena disciplina, dalje i od prvih pisanih zapisa o liječenju. Sigurno je da je bolest starija od samih ljudi, bakterije srodne današnjim uzročnicima bolesti nađene su u sedimentnim naslagama starima i do pola milijarde godina, dok se tragovi djelovanja parazita mogu pratiti i u životinjskim ostacima starim 350 milijuna godina.[1] Životinje instinktivno liže svoje rane, imobiliziraju ozlijeđeni dio tijela te jedu biljke koje imaju ljekovita svojstva. Već su antički autori poput Plinija u tim postupcima vidjeli inspiraciju za ljudsko prakticiranje liječništva.[2]

Početke medicine treba povezati s prvim svjesnim pokušajima čovjeka da se bolest otkloni, preduhitri ili pak ublaži. Za rasvjetljavanje najranije faze odnosa čovjeka prema bolesti, prije pojave pisanih dokumenata, ključnu ulogu imaju upravo arheološki nalazi, prije svega osteološki materijal. Upravo su degenerativne promjene na kostima najbrojniji svjedoci da su se ljudi borili za zdravlje, a protiv bolesti, od najranijeg vremena. Paleopatologija je interdisciplinarna znanost koja na temelju materijalnih nalaza proučava povijest bolesti kod ljudi i životinja. S obzirom na to da je iz osteološkog materijala moguće iščitati mnoge promjene u organizmu poput trauma ili bolesti, ona nam pomaže u formiranju znanja o zdravlju, bolesti, smrti, okolišu i kulturi prošlih populacija.[3]

Praćenjem trauma na kostima utvrđeno je kako su naši preci u vrijeme paleolitika patili od prijeloma i napuknuća kostiju, dislokacija zglobova, puknuća ligamenata i sl., a na osteološkom su materijalu pronađeni i tragovi degenerativnih bolesti vezanih uz kostur, poput osteoartritisa.[4] Povremeno se na osteološkim nalazima vide i jasni tragovi nasilja nastalih kao posljedica ozljeda, primjerice kopljem ili strelicama. Kako kosti zacjeljuju relativno ustaljenom brzinom, moguće je procijeniti približno vrijeme koje je proteklo od nastanka loma do smrti, što nam vrlo često govori je li ozlijeđenom pružena ikakva pomoć.[5] Na kostima se rijetko vide tragovi operativnih zahvata, poput amputacije, što svjedoči ne samo o postojanju "liječnika" u ranim ljudskim zajednicama, nego i o činjenici da se o preživjelom netko aktivno brinuo nakon tako ozbiljne traume.

Sl. 2. Detalj koštanih spatula bez proširenja, s urezom na vrhu. (Sisak, 1. – 4. st., K102 – 108)
~ Fig. 2 Detail of bone spatulas with a notch. (Sisak, 1st – 4th c., K102 – 108)

In order to describe the beginnings of medicine before it became a scientific discipline, we shoud go back to the very beginning of human history, even before the earliest written records regarding medical treatment. Disease is far older than people themselves, bacteria related to today's pathogens were found in sedimentary layers that are half a billion years old, while traces of parasitic activity were discovered in 350 million year old animal remains.[1] Animals instinctively lick their wounds, immobilize the injured part of their body and eat plants that have medicinal properties, and ancient authors such as Pliny saw the human inspiration for medical practice in these actions.[2]

We should look for the beginnings of medicine in man's first conscious attempts to eliminate, forestall or alleviate disease. Archaeological finds, primarily osteological material, play a key role in understanding the earliest stages of man's relationship with disease, before the appearance of written documents. Degenerative changes in the bones show us that people worked hard to stay healthy and fight disease. Paleopathology is an interdisciplinary science that studies the history of disease in humans and animals based on material findings. Since many changes can be seen in skeletal remains, such as trauma or disease, paleopathology helps us find out more about health, disease, death, environment and culture of past populations.[3]

1 Ackerknecht (1982: 4)
2 Plinije Stariji (lat. Gaius Plinius Secundus, 23.–79.g. po. Kr.), rimski pisac, prirodnjak i filozof, autor enciklopedijskog djela Povijest starog svijeta (lat. Naturalis Historia), napisanog u 37 knjiga.
~ Pliny the Elder (Gaius Plinius Secundus, 23–79 CE), Roman writer, naturalist and natural philosopher, author of the encyclopedic work Natural History (lat. Naturalis Historia), written in 37 books.
Coury (1967: 111)
3 Manger (2005: 1)
4 Ackerknecht (1982: 6)
5 Manger (2005: 7)

Prema osteološkim nalazima čini se da su rane lovačko–sakupljačke zajednice bile začuđujuće zdrave te da su glavninu bolesti koje su ih mučile činili uglavnom lomovi i ozljede. Život u malim mobilnim zajednicama zapravo je omogućio ljudima da izbjegnu razne druge vidove bolesti.[6]

S pojavom sjedilačkog načina života u neolitiku i napuštanjem lovačko–sakupljačke privrede ljudi postaju daleko podložniji širem spektru bolesti. Kada se uspoređuje zdravlje i tjelesne karakteristike prvih sjedilačkih populacija i lovaca–sakupljača dolazi se do zaključka da je ovisnost o određenom usjevu rezultirala lošijom prehranom što potvrđuju razlike u visini, građi i stanju zuba. Iako je hrane možda bilo dovoljno, prehrana je bila deficitarna vitaminima i mineralima.[7] Mnoge bolesti povezane s jednoličnom prehranom, poput rahitisa, skorbuta i anemije, ostavljaju tragove na kostima. Istraživanja osteološkog materijala pokazuju da je rahitis za vrijeme paleolitika bio rijedak, ali s razvojem većih naselja njegova je pojava sve češća.[8]

Još jedna važna promjena koja stiže s neolitikom, širenje je zaraznih bolesti među sjedilačkim populacijama. S pojavom domestifikacije životinje počinju živjeti u neposrednoj blizini ljudi, a vrlo često u ranim zajednicama dijele s njima i najuži životni prostor. Kod takve kohabitacije dolazi do prelaska uzročnika bolesti sa životinje na čovjeka, tj. prelaska bolesti s jedne vrste na drugu. Proces domestifikacije životinja nedvojbeno je pridonio i širenju niza do tada nepoznatih zaraznih bolesti.[9] Na taj su se način ljudi zarazili boginjama (prijenos s goveda ili pasa), ospicama i tuberkulozom (prijenos s goveda), hripavcem (prijenos sa svinja i pasa) te gripom (prijenos sa svinja i peradi).[10] Budući da ljudske populacije rastu i počinju živjeti u većim zajednicama, zarazne bolesti nailaze na vrlo plodno tlo jer se lako mogu prenijeti između oboljelog i novog nositelja.[11]

Još su rjeđi i zagonetniji tragovi postupaka koje su ljudi poduzimali kako bi otklonili, olakšali ili preduhitrili simptome uzrokovane bolešću, a njima se bavi paleomedicina.[12] Najlakše je prepoznati zacijeljele lomove kostiju, iako oni ne znače nužno da je slomljena kost bila svjesno namještena i svakako ne dokazuju da su postojale osobe koje su se bavile namještanjem kostiju.[13] Kod prapovijesnih lubanja ponekad se nailazi na tragove trepanacija (bušenja kosti lubanje) te na tragove kauterizacije na kostima (spaljivanje tkiva) što svjedoči o svjesnim kirurškim postupcima, iako oni nisu morali biti provedeni samo u svrhu liječenja. Jednostavnije je zaključiti da su rana prapovijesna društva u svojim pristupima liječenju koristila brojne biljke i ljekovite pripravke. Priroda u svojoj raznolikosti nudi brojne biljne anestetike, analgetike, emetike, narkotike, diuretike, kontraceptive i sl. Među sastojke rane farmakopeje treba uključiti i razne tvari životinjskog porijekla i minerale.

Karakteristika koja je zajednička svim ranim pokušajima liječenja, tj. primitivnoj medicini, općenito je neraskidiva povezanost bolesti, liječenja i magijskog. U osnovi je prapovijesna medicina okrenuta nadnaravnom te ono

By examining bones from the Palaeolithic era, it is evident that our ancestors suffered bone fractures and cracks, dislocations of joints, ruptures of ligaments, etc. Traces of degenerative diseases associated with the skeleton, for example osteoarthritis, were also found.[4] Osteological findings occasionally show clear signs of violence, resulting in injuries inflicted with a spear or arrows. As the bone heals at a relatively steady rate, it is possible to estimate the approximate time between the occurrence of the fracture and death, as well as if the injured person received any sort of treatment.[5] Evidence of surgery, like amputation, is rare, but prove not only the existence of a "doctor" in early societies, but the fact that the survivor received care after such a serious trauma.

According to osteological finds, it appears that early hunter–gatherers were remarkably healthy men, and they mostly dealt with fractures and injuries. Living in small mobile communities actually enabled people to escape various other aspects of disease.[6]

With the emergence of sedentary lifestyle in the Neolithic period, and the abandonment of the hunter–gatherer economy, people became far more vulnerable to a wide range of diseases. When comparing the health and physical characteristics of the first sedentary populations and hunter–gatherers, we see that the dependence on a specific crop resulted in a poorer diet as evidenced by the difference in height, as well as structure and condition of their teeth. Although there was enough food, it lacked vitamins and minerals.[7] Many diseases associated with a monotonous diet, such as rickets, scurvy and anaemia, leave marks on the bones. Analysis of skeletal remains showed that rickets was rare during the Palaeolithic, but its occurrence became more frequent with the development of larger settlements.[8]

Another important change that came with the Neolithic was the spread of infectious diseases among sedentary populations. As animals were domesticated, they lived in close proximity with people, and in early communities animals and people often share living space. In such conditions, the transition of pathogens from animals to humans became possible. The process of domestication also contributed to the spread of a series of previously unknown infectious diseases.[9] People were infected with smallpox (transmitted from cattle or dogs), measles and tuberculosis (transmitted from cattle), whooping cough (transmitted from pigs and dogs) and influenza (transmitted from pigs and poultry).[10] As human populations grew and began living in larger communities, the number of people suffering from infectious diseases grew, because they could be easily spread through contact with infected individuals.[11]

Paleomedicine deals with the very rare and puzzling traces of procedures that early humans undertook to remove ease or forestall the symptoms caused by different diseases.[12] Healed bone fractures are the easiest to recognize, although they do not necessarily mean that the broken bone was deliberately set, and certainly do not prove that there were people who were involved in adjusting broken bones.[13]

Traces of trepanation (drilling a hole in the skull) and cauterization (burning a part of a body to remove or close of a part of it) are sometimes found and demonstrate deliberate surgical procedures even though they did not have to be carried out only for the purposes of treatment. Early prehistoric societies must have used various plants and herbal remedies to treat disease. Nature is diverse and offers numerous herbal anaesthetics, analgesics, emetics, narcotics, diuretics, contraceptives and the like. Early pharmacopoeia also included a variety of substances of animal origin, as well as minerals.

The one thing that all early attempts at healing, or primitive medicine in general, have in common is a strong connection between disease, treatment and the magical world. Prehistoric medicine gravitates

6 *The History of Medicine, Pre-history. Student reference and support materials. St Boniface's College.* (06.01.2017.)
7 Harari (2011: 43)
8 Manger (2005: 7)
9 Mitchell (2003: 173); Baker (2013: 146)
10 Roberts, Manchester (1995)
11 Harari (2011: 87)
12 Treba razlikovati paleomedicinu (medicinu prapovijesnih zajednica) od primitivne medicine suvremenih tradicionalnih zajednica. Da bi rasvijetlila mnoge postupke ranih ljudi paleomedicina često koristi usporedbe sa sličnim praksama u primitivnoj medicini.
~ Paleomedicine should be distinguish form primitive medicine of contemporary traditional communities. To understand activities of early humans, paleomedicine often uses parallels with similar practices in primitive medicine.
13 Manger (2005: 13)

oblikuje sve, od uzroka bolesti do postupka njezinog liječenja. Kako se bolest često doživljava kao kazna nadnaravnih sila za neki oblik prijestupa, ljudi se tim istim silama obraćaju i za njeno uklanjanje. Kao posrednik u tom procesu javlja se šaman, vrač, mudrac koji može komunicirati s nadnaravnim silama i zna kako okrenuti tijek bolesti.[14] Dakle, u ranim je zajednicama uloga liječnika bila spojena s ulogom osobe koja je u procesu liječenja upotrebljavala rituale, talismane, amulete, molitve, inkantacije, zazivanje božanstava te koja je spravljala ljekovite pripravke, savjetovala kako udobrovoljiti ljute bogove ili nudila drugi oblik pomoći. Upravo je povezanost primitivne medicine i magije karakteristika koja se održala dugo nakon što se medicina počela razvijati kao samostalna znanstvena disciplina.

OZLIJEĐENI KRAPINSKI NEANDERTALCI

Dragutin Gorjanović Kramberger na Hušnjakovu Brdu kod Krapine otkrio je ostatke pračovjeka na kojima su modernim istraživanjima utvrđene ozljede koje je pračovjek uspješno liječio prije 130 000 godina. To su prijelomi ključne kosti, prijelomi podlaktice te amputacija podlaktice koje je pračovjek sanirao i preživio. Na kostima lubanje pronađene su frakture koje upućuju na teške ozljede glave, koje su morale uzrokovati i gubitak svijesti na određeno vrijeme, ali i tragove koštanog zacjeljivanja koji svjedoče da je osoba preživjela. Pračovjek sa slomljenim ključnom kosti nije bio sposoban za lov najmanje dva mjeseca, a takav podatak nam govori kako je zajednica krapinskog pračovjeka bila socijalno osjetljiva te je brinula o svojim oboljelim i ozlijeđenim članovima do njihova izlječenja. Ovaj je lom (clavicula 149) primjer najstarijeg saniranog loma ključne kosti u povijesti medicine, dok se do sada takvim smatrao lom opisan u egipatskom papirusu Edwin Smith.[15]

Sl. 3. Krapinski neandertalac bez podlaktice. (Arhiva Muzeja krapinskih neandertalaca)
~ Fig. 3 Neanderthal man from Krapina without a forearm. (Krapina Neanderthal Museum Archive)

towards the supernatural which can have an influence on everything, from the cause of the disease to its treatment. Since the disease is often perceived as a punishment from supernatural forces for some form of misconduct, people pray to those same forces for its removal. As a mediator in this process, we have a shaman, or medicine man, a wise man who can communicate with supernatural forces and knows how to change the course of the disease.[14] Therefore, in early communities, the role of the physician was carried out by the same person who used rituals, talismans, amulets, prayers, incantations, invocation of deities, prepared herbal remedies, advised on how to appease angry gods or provided other forms of assistance as part of the treatment. The connection between primitive medicine and the magical world is a characteristic that did not disappear for a long time after medicine started to develop as an independent scientific discipline.

INJURED NEANDERTHALS FROM KRAPINA

On Hušnjak hill near Krapina, Dragutin Gorjanović Kramberger discovered the remains of a prehistoric man whose injuries were successfully treated approximately 130,000 years ago. These injuries include a fractured collarbone, fractures of the forearm and an amputated forearm, all of which the prehistoric man survived. Fractures found on the skull indicate a serious head injury that had to cause a temporary loss of consciousness, and traces of bone healing suggest that the person survived. The individual with a broken collarbone was not able to hunt for at least two months and this tells us that the Krapina Neanderthals were socially sensitive and cared for the sick and injured members. The fractured collarbone (clavícula 149) is the oldest example of a healed broken collarbone in the history of medicine. The fracture was first described in the Egyptian Edwin Smith papyrus.[15]

14 Coury (1967: 112)
15 Rajković, Krklec (2008); Rajković (2011)

MEDICINA U CIVILIZACIJAMA STAROG ISTOKA
~
MEDICINE IN ANCIENT NEAR EAST

Počeci antičke medicine u staroj Grčkoj ne mogu se razmatrati u svojevrsnom vakumu. Nesumnjivo je da su medicinske tradicije naroda s kojima su Grci dolazili u kontakt imale utjecaj na razvoj medicinske misli u Grčkoj. Grci su od svojih susjeda preuzeli neke ideje kao i znanja o ljekovitim biljkama i pripravcima.[16] Zbog toga medicinskim praksama Mezopotamije i starog Egipta treba posvetiti nešto pozornosti.

MEDICINA MEZOPOTAMIJE

Medicinska misao Mezopotamije počinje sa Sumerom (c. 5000. – 2700. g. pr. Kr.). Na glinenim pločicama Sumerani su klinastim pismom zapisivali svakodnevne transakcije, ali se na njima nalaze i sumerska saznanja o znanosti, matematici i medicini. Zapisi o medicini tematski se mogu podijeliti na tri djela:, terapeutski ili medicinski tekstovi, tekstovi koji spominju simptome i njihova značenja i skupina tekstova koji samo usputno spominju bolesti i liječenje.[17] Medicinski su tekstovi, zapravo, niz uputa liječnicima koji započinju nabrajanjem simptoma, donose popis lijekova koji mogu pomoći te upute o tome na koji se način pripremaju i daju oboljelom.

Liječnik do dijagnoze ne dolazi pregledom bolesnika, nego detaljno ispituje pacijenta kako bi što više doznao o njegovoj bolesti.[18] Sumerani su smatrali da je bolest božja kazna te su cijeli niz demona i zlih duhova smatrali odgovornim za izazivanje bolesti. Magični i empirički aspekti medicine nisu bili razdvojeni pa je liječenje bolesti iziskivalo i fizički i spiritualni pristup. Uloga liječnika zbog toga je pripadala svećenicima koji su prepisivali ljekovite pripravke i izgovarali molitve.

I za Babilonce je bolest (kojoj uzrok nije ozljeda) bila kazna bogova. Ipak, za vrijeme Babilona (c. 19. – 16. st. pr. Kr.) u mezopotamskoj medicini se javljaju prve naznake određenih koncepata koji će biti ključni za daljnji razvoj antičke medicine, poput dijagnoze, prognoze i terapije.

Sl. 4. Detalj kružnog recipijenta koštane žličice. (Sisak, 1. – 4. st., K189)
~ Fig. 4 Detail of a bone spoon with a round recipient. (Sisak, 1st – 4th c., K189)

The beginnings of medicine in ancient Greece can not be examined on their own. There is no doubt that the development of medical thought in Greece was influenced by medical traditions Greeks came into contact with. The Greeks took some ideas from their neighbours, as well as knowledge about plants and herbal remedies.[16] Therefore, the medical practices of Mesopotamia and ancient Egypt cannot be disregarded.

MEDICINE IN ANCIENT MESOPOTAMIA

Medical thought in Mesopotamia began with Sumer (c. 5000 – 2700 BCE). Sumerians used clay tablets to write down their everyday transactions, but they also wrote about science, mathematics and medicine. Medical records can be divided into therapeutic or medical texts, texts that mention the symptoms and their meanings, and texts that mention the disease and treatment, but only in passing.[17] Medical texts are actually a series of instructions given to physicians, and they list the symptoms of different diseases, remedies that can help, and instructions on how to prepare and administer them to the sick.

A physician diagnoses not by examining patients but by asking them a series of questions in order to find out more about the illness.[18] Sumerians believed that disease was punishment from God, and a full range of demons and evil spirits were responsible for causing it. Magical and empirical aspects of medicine were not separated and the treatment required both a physical and spiritual approach. This is the reason priests became physicians who administered medicine and recited prayers.

16 Nutton (2004: 42)
17 Biggs (2005: 7–18)
18 Manger (2005: 16–17)

Jedan od izvora o medicinskoj praksi Mezopotamije je Hamurabijev zakonik.[19] Mnoge od točaka zakona spominju bolest, trudnoću, pobačaje, ulogu dojilje te liječničke i veterinarske pogreške kao i regulaciju liječničkih naknada s obzirom na financijsko stanje pacijenta.[20] Zakonik radi izričitu razliku između medicine i kirurgije. Liječnici se bave "unutarnjim bolestima" i pripadaju svećeničkoj kasti te ih ne obvezuje zemaljski zakon, dok kirurzi liječe "vidljive rane" te su kazne za njihove greške teške.[21]

Najopsežniji babilonski medicinski tekst *Sakkiku* pripisuje se znanstveniku Esagil–kin–apli.[22] *Sakkiku* je svojevrsni dijagnostički priručnik koji popisuje simptome prema kojima se određuje božanski uzročnik bolesti i postavlja dijagnoza. U njemu se i savjetuje kako treba pregledati pacijenta, kako se ništa ne bi propustilo, te kako donijeti točnu prognozu i odrediti terapiju.[23]

MEDICINA STAROG EGIPTA

Medicina faraonskog Egipta obuhvaća period od samog ustroja države krajem 4. tisućljeća pr. Kr. pa sve do perzijske invazije u 6. st. pr. Kr. Iako se medicinska praksa u tom periodu nije puno mijenjala, bila je vrlo napredna za svoje vrijeme te je utjecala na razvoj grčke medicinske misli. Herodot opisuje Egipćane kao najzdravije ljude, ali istovremeno naziva Egipat kolijevkom svih bolesti.[24]

Egipatska je medicina u dobroj mjeri bila povezana s religijom i nadnaravnim, što je nije spriječilo da razvije niz praktičnih poddisciplina.[25] U praksi su Egipćani razlikovali magiju i medicinu, ali su smatrali da najbolje djeluju zajedno; i liječnik i pacijent su vjerovali da inkantacije i molitve samo povećavaju mogućnost izlječenja. Prema egipatskom vjerovanju svi se ljudi rađaju zdravi, ali se kroz život susreću s nizom prijetnji zdravlju kroz djelovanje demona i zlih duhova.

Ideja o disbalansu tjelesnih tekućina kao uzroku bolesti potječe iz Egipta. Fiziološki i patološki procesi objašnjavani su kroz protok tekućina kroz žile koje donose tijelu potrebne nutrijente upravo kao što rijeka Nil donosi potrebnu hranu zemlji, a u skladu s teorijom o tjelesnim tekućinama razvili su kompliciran sustav tjelesnih kanala koji su prenosili krv, sluz, vodu, zrak, sjeme, urin i suze.[26]

Zahvaljujući stoljetnoj praksi mumificiranja pokojnika, Egipćani su posjedovali određena saznanja o anatomiji, poznavali su razmještaj unutarnjih organa te su imali određene predodžbe o kardiovaskularnom sistemu i o povezanosti pulsa i srca.[27]

Od liječnika se pri postavljanju dijagnoze očekivalo da detaljno pregleda pacijenta. Fizičkim pregledom utvrđivao se puls, opipavao abdomen, otkrivalo moguće abnormalnosti i provjeravalo rane. U postavljanju dijagnoze vrlo je važna bila komunikacija s pacijentom koji je liječniku prepričavao tijek bolesti.

Babylonians also believed that disease (which was not caused by injury) was a punishment from the gods. However, during the Babylonian empire (c. 19th–16th century BCE), the first indications of certain concepts that will be crucial for further development of ancient medicine, like diagnosis, prognosis and therapy, start to appear in Mesopotamian medicine.

An important written source for medical practice in Mesopotamia is the Code of Hammurabi.[19] The Code mentions disease, pregnancy, abortion, the role of wet nurses, medical and veterinary errors, and the regulation of doctors' fees with respect to the financial status of the patient.[20] It separates medicine and surgery. Physicians dealt with "internal diseases", belonged to the priestly caste and were not governed by earthly laws, while surgeons treated "visible wounds" and punishment for their mistakes were grave.[21]

The most extensive Babylonian medical text, *Sakkiku*, is attributed to the scholar Esagil–kin–apli.[22] *Sakkiku* is actually a diagnostic manual which lists symptoms in order to determine the divine cause of the disease and establish a diagnosis. It also states that a patient should be examined thoroughly in order to make an accurate prognosis and determine treatment.[23]

MEDICINE IN ANCIENT EGYPT

Medicine of pharaonic Egypt spans the period from c. 3050 BCE to the Persian invasion in the 6th century BC. Although medical practice throughout this period did not change significantly, it was advanced for its time and influenced the development of Greek medical thought. Herodotus described Egyptians as the healthiest people, but at the same time he called Egypt "the cradle of all disease."[24]

Egyptian medicine merged religion and the supernatural which did not stop it from developing a whole set of practical sub disciplines.[25] The Egyptians actually separated magic and medicine, but felt that the two worked best when applied together. Physicians, as well as patients, believed that incantations and prayers only increased the chance of a cure. Egyptians believed that all people were born healthy, but they encountered a number of health threats in the form of demons and evil spirits through life.

The idea that an imbalance in bodily fluids causes disease was first formed in Egypt. Physiological and pathological processes were explained through the flow of fluids along the vessels bringing necessary nutrients to the body, just as the river Nile brought necessary food to the country. Egyptians developed a theory of "channels" that transmitted blood, mucus, water, air, seeds, urine and tears throughout the body.[26]

Because of the centuries–old practice of mummification, Egyptians possessed some knowledge of the human anatomy, the layout of internal organs and a vague idea of the cardiovascular system, as well as, the connection between pulse and heart.[27]

To make a diagnosis, a physician was expected to examine the patient, check the pulse, palpate the abdomen, reveal possible abnormalities and inspect any wounds. The communication with the patient was very important in establishing the right diagnosis so the patient was expected to recount the course of the disease to the physician.

Medicine in Ancient Egypt showed a high level of specialization. This was the result of the religious belief that no part of the body was without its patron, so the role of the physician was often performed by a priest. Priests who served a specific deity also specialized in particular organs that were dedicated to same deity.[28] Aside from physician–priests there were lay practitioners. The state often paid civilian physicians to monitor public works, the military, burial sites, and the palace.

The oldest known physician, Hesy–Ra,[29] the first female physician Merit Ptah[30] and

19 Hamurabijev zakonik, jedan od najstarijih pravnih dokumenata u povijesti nastao je oko 1754. g. pr. Kr. za vrijeme vladavine šestog babilonskog kralja Hamurabija.
~ Code of Hammurabi, one of the oldest legal documents in history, dates back to about 1754 BCE, during the reign of the sixth Babylonian king Hammurabi.
Prince (1904: 601–609)

20 Za uspješnu operaciju ili spašavanje vida građanina liječnik je dobivao 10 šekela. Za isti postupak na oslobođeniku 5 šekela, dok je naknada za roba samo 2 šekela.
~ For a successful operation or saving the eyesight of a citizen, a doctor would have received 10 shekels. But for the same procedure on a freedman he would have received 5 shekels, and only 2 shekels for slaves.
Harper (prev.) (1999: br. 215, 216, 217)

21 Zakoni 218 i 220 navode da ako liječnik (u ovom smislu kirurg) operira pacijenta s teškom ozljedom i pacijent umre, ili ako pokuša otvoriti abces na oku te pri tom oslijepi pacijenta, liječniku treba odrezati prste. Ako pak operira roba i rob umre, mora nadoknaditi vlasniku štetu kupnjom roba iste vrijednosti.
~ Laws 218 and 220 state that if a physician (in this sense surgeon) operates on a patient with a serious injury, and the patient dies, or if he tries to open the abscess of the eye and blinds the patient, then physician's fingers should be cut off. If, however, he operates on a slave and the slave dies, then the physician must repay the owner by buying a slave of the same value.
Harper (prev.) (1999: br. 218, 219); Manger (2005: 31)

22 Esagil–kin–apli bio je vodeći učenjak na dvoru babilonskog kralja Adad–apla–iddine sredinom 11. st. pr. Kr.
~ Esagil–kin–apli was a leading scholar at the court of the Babylonian king Adad–apla–Iddin in mid–11th century BCE.
Finkel (1988: 143–59)

23 Horstmanshoff, Stol (2004: 661–663)

24 Herodot (grč. Ἡρόδοτος, c. 484. – 425. g. pr. Kr.), grčki povjesničar, često nazivan ocem povijesti. Autor *Povijesti* (grč. Ἱστορίαι), detaljnog povijesnog pregleda Grčko–perzijskih ratova.
~ Herodotus (Ερόδοτος, ca 484–425 BCE), Greek historian, often called the "Father of history". Author of *Histories* (Ιστορίαι), a detailed historical account of the Greco–Persian wars.
Herodotus II.34; Manger (2005: 31)

25 Poznate su poddiscipline poput anatomije, javnog zdravstva i dijagnostike.
~ Subdisciplines such as anatomy, public health and diagnostics were known.
Nunn (2002)

26 Estes (1990)

27 *What progress did the Egyptians make in medical knowledge.* (15.11.2016.)

Medicina je u starom Egiptu pokazivala visoku razinu specijalizacije. To je u prvom redu posljedica religijskog vjerovanja da nijedan dio ljudskog tijela nije bez svoga zaštitnika, a kako su ulogu liječnika vrlo često preuzimali svećenici, koji su služili određenom božanstvu, oni su se i specijalizirali za pojedine organe koji su tom božanstvu bili posvećeni.[28] Uz liječnike–svećenike postojali su i liječnici–laici. Često je država plaćala civilnim liječnicima da nadziru javne radove, vojsku, mjesta ukopa, ali i palaču.

Iz starog Egipta dolazi nam i najstariji imenom poznati liječnik, Hesy–Ra,[29] ali i prvi spomen liječnice Merit Ptah,[30] kao i najstariji medicinski instrumenti na svijetu. U Saqqari kod Memfisa je 2006. godine otkrivena grobnica kraljevskog liječnika imenom Qar koji je živio oko 2700. g. pr. Kr., a u kojoj su, između ostalog, pronađeni kirurški instrumenti te statua Imhotepa.[31]

Imhotep je zasigurno najpoznatiji liječnik starog Egipta i njegova priča u dobroj je mjeri usporedna s onom grčkog boga liječništva Asklepija. Imhotep (c. 2650. – 2600. g. pr. Kr.) je služio na dvoru Đosera, faraona Treće dinastije.[32] Imhotepov se put prema liječničkom božanstvu dijeli na tri faze. Prva je faza njegovo liječničko djelovanje na dvoru faraona, druga je njegova uloga polubožanstva (zaštitnika), a treća faza nastupa dvije tisuće godina nakon njegove smrti kada Imhotep postaje važno liječničko božanstvo.[33] Postaje, naime, božanstvo medicine i liječnika te ga se često identificira i povezuje s bogom Tothom.[34] Grci su ga izjednačili s Asklepijem, bogom liječništva čiji kult se javlja stoljeće kasnije, krajem 5. st. pr. Kr.[35] Imhotepov se kult najprije pojavio u Memfisu, na mjestu njegova ukopa te se kasnije proširio Egiptom i Numibijom. Posvećivani su mu hramovi u kojima je veliku ulogu u liječenju igrala inkubacija, tj. spavanje u hramu, aspekt koji će preuzeti grčka svetišta boga Asklepija.[36]

Sl. 5. Medicinski papirus iz razdoblja Novog Kraljevstva (1552. – 1069. g. pr. Kr.) iz fundusa egipatske zbirke AMZ–a, inv.br. 5973.
~ Fig. 5 Medical papyrus, the New Kingdom period (1552 – 1069 BCE), from the Egyptian Collection at the AMZ, inv.no. 5973.

the oldest medical instruments in the world all come from ancient Egypt. In 2006, a tomb belonging to Qar, a royal physician who lived c. 2700 BCE, was discovered in Saqqara near Memphis with a set of surgical instruments and a statue of Imhotep.[31]

Imhotep is certainly the most famous physician from ancient Egypt and his story corresponds to the story of the Greek god of medicine Asclepius. Imhotep (c. 2650–2600 BCE) served at the court of Djoser, a Third Dynasty pharaoh.[32] Imhotep's rise to the position of medical deity is divided into three phases. The first phase is represented by his medical activity at court, the second is marked by his role as a demigod (patron), and the third phase started two thousand years after his death, when he became a deity of medicine and healing.[33] He was often associated with the god Thoth.[34] The Greeks linked him with Asclepios, god of medicine, whose cult appeared a century later at the end of 5th century BCE.[35] Imhotep's cult first emerged in Memphis, at the place of his burial, and later spread to Egypt and Numibia. Temples where incubation (practice of sleeping in a temple) played a major role were dedicated to him, and the practice was later adopted by sanctuaries of Asclepius in Greece.[36]

Medical papyri, the most important source for the study of medical traditions in ancient Egypt, give details on disease, diagnosis and treatments including herbal remedies, surgery and magical spells. There are eight fragmented papyri written between 1900 and 1100 BCE that contain parts of older texts. Three of them are crucial for understanding how Egyptians saw disease and health, anatomy and physiology, magic and medicine.[37]

Kahun Gynaecological Papyrus is considered to be the oldest medical text, and dates back to around 1900 BCE. It is divided into 34 parts, and each one describes a particular medical problem, gives a diagnosis and provides a treatment. It deals with women's health, fertility, conception and contraception.[38]

Ebers Papyrus is the longest medical text and represents the most comprehensive record of medicine in ancient Egypt. It was written in about 1500 BCE and includes fragments of at least 40 older texts. It contains over 700 medicinal remedies and magical formulas uniting the two aspects of Egyptian medicine. A small portion of the text describes internal organs (especially the heart), and another part deals with mental disorders, such as depression and dementia.[39]

Edwin Smith papyrus is the oldest medical treatise on surgery, anatomy and physiology written in about 1600 BCE. The papyrus includes 48 case studies of injuries, fractures, wounds, dislocations and tumours. It is unique because all the other medical papyri are based on magic, and here we have a rational and scientific approach to medicine.[40]

EGYPTIAN MEDICINE

Medical papyrus (Inv. No. 597–3) is a part of the Egyptian collection in the Archaeological Museum in Zagreb. It is a short fragment of a hieratic text written in black ink in three lines, while the last word of the first line is written in red. The text instructs how to make a remedy for some illness or injury that should be applied on the wound. A few ingredients are given: beef fat, red ochre, sea salt and copper dust, and even some herbal remedies — carob, cucumber, moringa oil.[41]

28 Egipatski medicinski tekstovi od užih specijalnosti spominju ekvivalente današnjih oftamologa, gastroenterologa, proktologa, zubara te također inspektore liječnika i nadglednike. Od liječnika se također očekivao visoki stupanj profesionalnog ponašanja.
~ Egyptian medical texts mention equivalents of today's ophthalmologist, gastroenterologist, proctologist, dentists and also physician inspectors and overseers. The high degree of professional conduct was expected from a physician.
Estes (1990); Manger (2005: 39)

29 Hesy–Ra (c. 2700. g.pr.Kr.) bio je kraljevski liječnik i zubar na dvoru faraona Đosera, vladara Treće dinastije.
~ Hesy–Ra (c. 2700 BCE) was a royal physician and dentist at the court of Pharaoh Djoser, the Third Dynasty ruler.
Ranke (1935: 259); Helck (1968: 47)

30 Merit Ptah je živjela oko 2700. g. pr. Kr. Žene su se u faraonskom Egiptu bavile kirurgijom, ginekologijom i porodništvom te su postojale škole za liječnice.
~ Merit Ptah lived c. 2700 BCE. Women in Pharaonic Egypt were surgeons, gynecologists and obstetricians, and there were schools for female physicians.
Klenke (2011: 192)

31 El–Aref (2006); Jackson (2006)

32 Imhotep je bio faraonov savjetnik, kraljevski arhitekt, inženjer, astronom, prorok i liječnik te vrhovni svećenik boga Raa. Između ostalih postignuća, pripisuje mu se gradnja stepenaste piramide faraona Đosera u Saqqari.
~ Imhotep was a royal adviser, architect, engineer, astronomer, physician, prophet and supreme priest of the god Ra. Among other achievements attributed to Imhotep is the construction of the Pharaoh Djoser's Step Pyramid in Saqqara.
Barnett (2000: 90); Osler (2004: 12); Encyclopaedia Britannica (:19.11.2016.)

33 Barnett (2000: 90); Manger (2005: 39)

34 Boylan (1922: 166–168)

35 Allen (2005: 12)

36 U hramovima su se svećenici-liječnici brinuli za oboljele koristeći pritom kupke posvećenom vodom, izolaciju, tišinu i tumačenje snova kao oblike terapije.
~ In temples, physician-priests took care of patients using baths with holy water, isolation, silence and dream interpretation as a form of therapy.
Manger (2005: 31)

Najvažniji izvor za upoznavanje medicinske tradicije starog Egipta medicinski su papirusi, koji nam donose detaljne opise bolesti, dijagnoze i liječenja koje je uključivalo biljne pripravke, operativne zahvate i magiju. Riječ je o osam fragmentiranih papirusa nastalih između 1900. i 1100. g. pr. Kr., koji sadrže dijelove starijih tekstova. Tri su ključna za razumijevanje egipatskih stavova o bolesti i zdravlju, anatomiji i fiziologiji, magiji i medicini.[37]

Papirus Kahun smatra se najstarijim medicinskim tekstom uopće, a datira se oko 1900. g. pr. Kr. Podjeljen je u 34 djela, od kojih svaki opisuje određeni medicinski problem te postavlja dijagnozu i nudi tretman. Svi se problemi tiču zdravlja žena, plodnosti, začeća i kontracepcije.[38]

Papirus Ebers najduži je medicinski tekst i predstavlja najcjelovitiji zapis o medicini starog Egipta. Nastao je oko 1500. g. pr. Kr. te također sadrži fragmente barem 40 starijih tekstova. Sadrži preko 700 ljekovitih pripravaka i magičnih formula te ujedinjuje dva lica egipatskog liječenja, medicinu i magiju. Manji dio teksta bavi se opisom unutarnjih organa (posebice srca), dok dio opisuje mentalne poremećaje, poput depresije i demencije.[39]

Papirus Edwin Smith najstarija je medicinska rasprava o kirurgiji, anatomiji i fiziologiji, nastala oko 1600. g. pr. Kr. Papirus sadrži 48 slučajeva ozljeda, fraktura, rana, dislokacija i tumora. Ono što ga izdvaja od ostalih medicinskih papirusa je racionalan i znanstven pristup koji zagovara, dok se ostali tekstovi podjednako oslanjaju na medicinu i na magiju.[40]

EGIPATSKI LIJEK

Medicinski papirus inv. br. 597–3 čuva se u fundusu egipatskog odjela Arheološkog muzeja u Zagrebu. Radi se o fragmentu kratkog hijeratskog teksta napisanog crnom tintom u tri retka, osim zadnje riječi prvog retka koja je napisana crvenom tintom. Tekst predlaže uputu o lijeku protiv neke bolesti ili ozljede koji treba nanijeti na ranu. Navodi se nekoliko tvari: goveđa mast, crveni oker, morska sol, bakrena prašina te još neki biljni pripravci — rogač, krastavac, ulje moringe.[41]

Sl. 6. Kip boga Apolona–Sola naslonjenog na tronožac (tripod) oko kojeg je omotana zmija, što su atributi koji ga određuju kao boga proricanja. (Varaždinske Toplice, poč. 3. st., K1, Foto: Zottman GmbH)
~ Fig. 6 Statue of Apollo Sol leaning on a tripod with a coiled snake, attributes that define him as a god of divination. (Varaždinske Toplice, beginning of 3rd c., K1, Photo: Zottman GmbH)

37 Osam medicinskih papirusa čine papirus Kahun, medicinski papirus Ramessum, papirus Edwin Smith, papirus Ebers, papirus Hearst, medicinski papirus iz Londona, papirus Brugsch (zvan također i papirus iz Berlina) i papirus iz Carlsberga.
~ There are eight main medical papyri: Kahun Gynaecological Papyrus, Ramessum Medical Papyri, Edwin Smith Papyrus, Ebers Papyrus, Hearst Papyrus, London Medical Papyrus, Brugsch Papyrus (also called the Greater Berlin Papyrus) and Carlsberg Papyrus. Grapow et al. (1954)
38 Kahun Papyrus Collection at University College (2002)
39 Stern (1875)
40 Breasted (1930)
41 Uranić (2007)

BOŽANSKI LIJEČNICI U ANTICI
~
DIVINE HEALERS IN ANTIQUITY

Stari su Grci smatrali da je bolest kazna bogova za prijestupe i grijehe ljudi. Bogovi su bolešću kažnjavali pojedince ili pak čitave zajednice, izazivajući tajanstvene epidemije koje su odnosile brojne živote. Ali u podjednakoj mjeri bogovi i liječe, posredstvom svećenstva pa se tijekom antike razvijaju brojni kultovi božanstava i polubožanstava povezanih s izlječenjem. Ovdje ćemo se osvrnuti samo na nekoliko najvažnjih lječilišnih božanstava, iako antička mitologija nudi puno veći izbor.

Liječnici nisu u slučajevima teških i dugotrajnih bolesti bili jedini kojima su se ljudi obraćali.[42] Uloga svećenika i molitve kod oboljelih ostaje jednako važna i prisutna i u razdoblju u kojem grčka medicina poprima znanstvene okvire, a pojava novog lječilišnog kulta upravo to dokazuje.

Uz Hipokrata i njegovo učenje, jednako je važna pojava za povijest antičke medicine širenje kulta boga liječništva Asklepija (grč. Ἀσκληπιός).[43] Pojava Asklepijevog kulta i rađanje hipokratove medicinske misli događaju se gotovo istovremeno, tijekom 5. st. pr. Kr. Iako se na prvi pogled dva koncepta čine nepomirljivima, temeljne su postavke Hipokratove medicine iste kao i premise religioznog liječenja koje se vezivalo uz Asklepija.

PODRIJETLO BOLESTI

Jedan od najživopisnijih grčkih mitova koji objašnjava postanak bolesti, zasigurno je onaj o Pandori.[44] Zeus je odlučio kazniti ljude jer im je titan Prometej poklonio vatru. "Tako je Zeus pod obličjem dobrote stvorio blistavo zlo i dao mu je ime Pandora (grč. Πανδώρα, obdarena svim darovima) jer je svaki od besmrtnika obdario djevojku kakvim kobnim darom za ljude." Pandora je zajedno sa sobom na svijet donijela i posudu, pitos, u kojoj su se nalazila sva zla i nedaće koje muče ljude, pošasti, bolesti i razne boli. Podigla je poklopac, a iz posude je izletjelo jato svakojakih nevolja koje su se razletjele po cijeloj zemlji. "Bolesti su pohađale ljude danju i noću, potajno i nečujno jer im je Zeus uskratio dar govora. Svakojake groznice zaposjele su zemlju, a smrt, koja je prije samo polagano dolazila ljudima, ubrzala je svoje korake."[45]

Sl. 7. Mramorni reljef Eskulapa i Higijeje između kojih se nazire patuljak Telesfor. (Zemun, 1. – 2. st., K2)
~ Fig. 7 Marble relief of Asclepius and Hygieia with Telesphoros standing between them. (Zemun, 1st – 2nd c., K2)

Ancient Greeks believed that disease is punishment from the gods for people's transgressions and sins. The gods punished individuals or entire communities with disease, sometimes causing mysterious plagues that took countless lives. But gods could also cure through the help of priests, so numerous cults appeared that worshiped deities and heroes associated with healing. Here we take a look at a few important deities of healing although ancient mythology offers us a much wider selection.

Physicians were not the only ones that people came to in cases of severe and prolonged illnesses.[42] The role of priests and prayer remained equally important and present at a time when Greek medicine took on a more scientific framework and the emergence of a new cult of healers proves it.

The spread of the cult of Asclepius (Ἀσκληπιός), god of medicine, is equally important for the history of ancient medicine as Hippocrates and his teachings.[43] The emergence of the cult of Asclepius and the birth of the Hippocratic medical thought occurred almost simultaneously, during the 5th century BCE. Although the two concepts look irreconcilable at first glance, the basic tenets of the Hippocratic medicine were the same as the premise of religious healing that was connected with Asclepius.

42 Manger (2005: 104)
43 Nutton (2004: 103)
44 Hesiod (grč. Ἡσίοδος, c. 750. – 650. g. pr. Kr.), grčki pjesnik, približno Homerov suvremenik. Autor dvaju važnih epova *Teogonija* (grč. Θεογονία) i *Poslovi i dani* (grč. Ἔργα καὶ Ἡμέραι).
~ Hesiod (Ἡσίοδος, ca 750 to 650 BCE), Greek poet considered to be Homer's contemporary. Author of two important epics *Theogony* (Θεογονία) and *Works and Days* (Εργα καὶ Ἡμέραι).
Hesiod. *Poslovi i dani*. 91–92, 102
45 Schwab (2000: 5–9)

APOLON

Od dvanaest olimpijskih božanstava, Apolon (grč. Ἀπόλλων, lat. Apollō) je jedan od najvažnijih bogova grčkog i rimskog panteona. Štovan je kao bog zaštitnik umjetnosti (glazbe i poezije), istine, proricanja, sunca i svjetlosti, streličarstva, znanja, prosvjetljenja i liječenja.[46] Lica i uloge boga Apolona brojne su i složene pa ga mnogi smatraju jednim od najkompleksnijih grčkih božanstava. Zbog toga ćemo se ovdje osvrnuti samo na njegovu ulogu kao zaštitnika liječenja.

Sin je Zeusa i Lete rođen na planini Kint na otoku Delu, zajedno sa sestrom blizankom, božicom Artemidom. Bio je štovan diljem Grčke, posebice u Delfima, najpoznatijem proročištu starog svijeta, a kako je postao i zaštitnikom grčkih kolonista, njegov se kult polako širio diljem Sredozemlja.[47]

Apolon je imao sposobnost da izazove, ali i otkloni epidemiju.[48] Nije jasno od kuda potječe liječnički aspekt boga Apolona, ali ga se često dovodi u vezu s bogom Paianom (grč. Παιών/Παιήων/Παιάν), liječnikom samih bogova.[49] Brojni su pridjevi koji se dodjeljuju Apolonu, a naglašavaju njegovu ulogu kao boga bolesti i liječenja. Naziva ga se Apolon Akesios (grč. Ἀκέσιος), Apolon Akestor (grč. Ἀκέστωρ) ili Apolon Epikuros (grč. Ἐπικούριος) što znači izlječitelj.[50] Često mu se nadjeva pridjev Iatros (grč. Ἰατρός) što doslovno znači liječnik.[51] Apolon Alexikakos (grč. Ἀλεξίκακος) je onaj koji tjera bolest, dok Apolon Parnopius (grč. Παρνόπιος) donosi pošast i bolest. Rimljani mu nadijevaju pridjev Medicus što odgovara grčkom Iatros.

Apolon je prvo grčko božanstvo koje su prisvojili Rimljani. Kako nije postojalo italsko božanstvo sličnih karakteristika, ni ime mu nije promijenjeno.[52] Prije nego je postao dio rimskog kulta Apolon je mjesto našao kod Etrušćana kao Apulu.[53] Rimski kraljevi etruščanskog porijekla štovali su ga i konzultirali njegovo proročište u Delfima.[54] Službeno je Apolon stigao u Rim na poziv Senata kao božanstvo koje će otjerati kugu koja je harala gradom 433. g. pr. Kr.[55] U znak zahvalnosti, 431. g. pr. Kr. sagrađen je hram na Flamanskim poljanama posvećen Apolonu Medicusu "pro valetudine Populi Romani".[56] Apolon je, uz druga grčka božanstva bio prisutan i na *lectisterniumu* 399. g. pr. Kr. iz istog razloga, kako bi se odagnala pošast.[57] Apolon Medicus je u Rimu prvenstveno bio božanstvo zaduženo za javno zdravlje jer je tjerao pošast, a karakteristike božanstva odgovornog za osobno zdravlje pojedinca razvio je tek kasnije.

Apolonov je kult bio izuzetno dugotrajan te se kod njega može zapaziti da je doživljavao određene uspone i padove.[58] U Carskom razdoblju proširio se na zapadne provincije, posebice Galiju i Britaniju, te duž rajnskog limesa, gdje je identificiran s keltskim božanstvima.[59]

Apolon se prikazivao kao nagi mladić s različitim atributima, najčešće s lukom i strijelom, lirom ili tronošcem. Svaki od prikazanih atributa

ORIGIN OF DISEASE

One of the most vivid Greek myths explaining the origin of disease is certainly the one about Pandora.[44] Zeus decided to punish mankind because titan Prometheus gave them fire. "Zeus created evil under the mask of kindness and gave it the name Pandora (Πανδώρα, endowed with all the gifts), because each of the immortals bestowed the girl with a gift fatal to people." When she came to earth, Pandora brought with her a container, a pithos in which all the evils and misfortunes were stored. It also contained plagues, disease and different kinds of pain. When she lifted the lid, all kinds of disasters came out and spread all over the world. "Disease tormented people day and night, but secretly and silently because Zeus did not give them the gift of speech. Fever ravaged the country, and death, which came slowly before, became faster."[45]

APOLLO

One of the twelve Olympic deities, Apollo (Ἀπόλλων, Apollo) is one of the most important gods of the Greek and Roman pantheon. He was worshipped as the patron deity of arts (music and poetry), truth, prophecy, sun and light, archery, knowledge, enlightenment and healing.[46] Apollo took on numerous and complicated aspects and roles therefore he is considered one of the most complex Greek deities. For this reason we are only going to examine his role as a patron of healing.

The son of Zeus and Leto was born on the mountain Kint on the island of Delos, along with his twin sister, the goddess Artemis. He was worshiped throughout Greece, especially at Delphi, the most famous oracle of the ancient world. Because he became the patron of Greek colonists, his cult slowly spread throughout the Mediterranean.[47]

Apollo had the ability to cause, but also repel plague.[48] It is not clear where the medical aspect of Apollo came from, but he was often associated with the god Paian (Παιών

46 Addison Jayne (1962: 307)

47 Najstarija Apolonova svetišta, poput otoka Dela i polisa Tebe, datiraju se u 8. i 9. st. pr. Kr. Posebice je bio štovan i u Akciju, mjestu povijesne bitke između Marka Antonija i budućeg cara Augusta.
Strabon (grč. Στράβων, 64./63. g. pr. Kr.–24. g. po. Kr.) grčki geograf, filozof i povjesničar. Najpoznatije njegovo djelo je *Geografija* (grč. Γεωγραφικά), zemljopisna enciklopedija napisana u 17 knjiga.
~ The oldest sanctuaries of Apollo on the island of Delos and in Thebes date back to the 8th and 9th century BCE. He was worshiped in Action, the site of the historic battle between Mark Antony and the future Emperor Augustus.
Strabo (Στράβων, 64/63 BCE – 24 CE) Greek geographer, philosopher and historian. His best known work is *Geography* (Γεωγραφικά), a geographical encyclopedia consisting of 17 books.
Strabo. *Geography X*. 451

48 U uvodnim pjevanjima Ilijade Apolon se bori na strani Trojanaca i strijelama šalje kugu Grcima jer je Agamemnon uvrijedio njegovog svećenika Hriza.
Homer (grč.Ὅμηρος, c. 8. st. pr. Kr.), grčki pjesnik, autor epova Ilijada (grč.Ἰλιάς) i Odiseja (grč. Ὀδύσσεια).
~ In the opening cantos of Iliad, Apollo fought with the Trojans and sent a plague to the Greeks because Agamemnon had offended his priest Cryses.
Homer (Ὅμηρος, ca 8th century BCE) Greek poet, author of the epics Iliad (Ἰλιάς) and Odyssey (Ὀδύσσεια).
Homer. Ilijada. 1.10

49 Addison Jayne (1962: 302); Barnett (2000: 163)

50 grč. ἄκεσις=lječenje, ἐπικουρώ=pomoć
~ ἄκεσις=healing, ἐπικουρώ=help
Smith (2015)

51 Euripid (grč. Εὐριπίδης, c. 480. – 406. g. pr. Kr.) grčki dramatičar klasičnog razdoblja. Autor tragedija Medeja, Andromaha, Elektra i Hipolit.
~ Euripides (Εὐριπίδης, ca 480–406 BCE) Greek dramatist of the Classical period. Author of the Medea, Andromache, Elektra and Hippolytus.
Euripid. Andromaha. 901

52 Apolon je stigao u Italiju s prvim grčkim kolonistima u Magnu Graecu, dovoljno rano da se mogao smatrati domaćim italskim božanstvom.
~ Apollo came to Italy with the first Greek colonists to Magna Graecia early enough to be considered a local Italic deity.
Addison Jayne (1962: 474)

53 Krauskopf (2006: 73–75)

54 Među rimskim kraljevima etruščanskog porijekla koji su štovali Apolona i tražili njegov savjet, ističe se Takrvinije Oholi (lat. Tarquinius Superbus, c. ? – 495. G. pr. Kr.) koji je pri donošenju odluka često konzultirao proročište u Delfima.
Tit Livije (lat. Titus Livius, 64. ili 59. g. pr. Kr. – 17. g. po. Kr.) rimski povjesničar, autor monumentalnog djela Povijest Rima (lat. Ab urbe condita).
~ Tarquinius Superbus stands out as a Roman king who worshiped Apollo and asked for his advice (c. ? – 495 BCE). He often consulted the oracle at Delphi when making important decisions.
Titus Livius (64 or 59 BCE –17 CE) Roman historian, author of the monumental History of Rome (Ab urbe condita).
Livy. Ab Urbe Condita. I.56

55 Moguće je da je Apolonova pomoć zatražena i tijekom epidemije 464. – 463. g. pr. Kr.
~ It is possible that Apollo's help was sought during the 464–463 BCE plagues.
Addison Jayne (1962: 475)

56 Pro valetudine Populi Romani = za zdravlje rimskog naroda
~ Pro valetudine Populi Romani = for the health of the Roman nation.
Apolonova pomoć zatražena je i pri izbijanju epidemija 399. , 212. i 181. g. pr. Kr.
~ Apollo's assistance was requested at the outbreak of the plagues in 399 BCE, 212 BCE and 181 BCE.
Livy. Ab Urbe Condita. III.63.7, IV.25.3.; Orlin (2010: 11)

57 Lectisternium (od lat. lectum sternere= prostrijeti ležaj) je bio stari rimski običaj prilaganja hrane božanstvima, najčešće u slučajevima nepogoda poput velikih epidemija. Biste ili skulpture božanstva bi se izložile na ležajevima te bi im se servirala hrana.
~ Lectisternium (from the Latin lectum sternere = lay the bed) was the ancient Roman custom of offering food to deities, most often in cases of natural disasters such as plagues. Busts or sculpture of deities were displayed on couches and served food.
Addison Jayne (1962: 255)

58 Značaj Apolonova kulta opada sve do bitke kod Akcija 31. g. pr. Kr., nakon čega Oktavijan odlučuje obnoviti štovanje božanstva. Apolon postaje dijelom obiteljskog kulta te mu Oktavijan 28. g. pr. Kr. podiže hram na Palatinu na svom privatnom posjedu.
Svetonije (lat. Gaius Suetonius Tranquillus, c. 69.–120. g. po. Kr.) rimski povjesničar i kroničar, najpoznatiji po djelu Dvanaest rimskih careva (lat. *De Vita Caesarum*).
Kasije Dio (lat. Cassius Dio, c. 155.–235. g. po. Kr.) rimski političar i povjesničar, autor Rimske povijesti (lat. Historia Romana).
~ The significance of Apollo's cult declined until the battle of Actium in 31 BCE when Octavian decided to restore the deity. Apollo became part of the family cult and, in 28 BCE, Octavian raised a temple in his honnor on his private property on the Palatine.
Suetonius (Gaius Suetonius Tranquillus, c. 69 to 120 BCE), Roman historian and chronicler, best known for his work Twelve Roman Emperors (*De Vita Caesarum*).
Cassius Dio (ca 155 to 235 BCE), Roman politician and historian, author of Roman history (Historia Romana). / Svetonije 18.2; Cassius Dio. Roman History. LI.1.1–3.; Liebeschuetz (1979: 82–85)

59 Apolon je identificiran s keltskim božanstvima Belenusom, Borvom, Grannusom i drugima. Na natpisima se tako spominje Apollo-Grannos i Apollo-Belenus koji "dijeli svjetlost, toplinu i liječi." Sva tri keltska božanstva posebice su se štovala u blizini ljekovitih izvora.
~ Apollo was identified with Celtic deities Belenus, Borvus, Grannus and others. He was named Apollo-Grannos and Apollo-Belenus, the one who "shares the light, heats and heals." All three Celtic deities were worshiped in the vicinity of healing springs.
Addison Jayne (1962: 478)

naglašava jednu od njegovih božanskih karakteristika. Ako je prikazan sa zmijom, jednom od njegovih svetih životinja, možemo pretpostaviti da se to odnosi i na njegov aspekt zaštitnika od bolesti.

I Apolonovoj sestri Artemidi, Dijani za Rimljane, pripisivane su sposobnosti izliječenja. Najčešće je prikazivana kao mlada djevojka u kratkoj haljini, često u pratnji životinja. Artemida je bila božica lova, divljih životinja, ali i zaštitnica poroda, što je uloga koju je preuzela još dok je pomagala pri rođenju svog brata Apolona.[60] Štovala se pod imenom Artemida Locheia kao zaštitnica primalja i poroda. Također se smatralo da Artemida može zaštititi žene od bolesti i fizičke boli, ali ih i kazniti njima. Poznata joj je bila i uporaba ljekovitog bilja. Poznata lječilišna svetišta posvećena Artemidi nalazila su se u Lusiju u Arkadiji i Efezu.[61] Artemida je i pod okrivljem Rima zadržala svoju ulogu zaštitnice žena i djevojaka, te poroda. U Dijaninom svetištu u Nemiju žene su joj posvećivale pupčanu vrpcu svojeg prvorođenog djeteta kao zahvalu za siguran porod.[62]

Sl. 8. Mramorna glava božice Dijane koju krasi nježno oblikovano lice i raskošno složena frizura. (Senj, poč. 3. st., K4)
~ Fig. 8 Marble head of goddess Diana with a gentle face and an elaborate hairstyle. (Senj, beginning of 3rd c., K4)

/ Παιήων / Παιάν), physician of the gods.[49] Various names were assigned to Apollo that emphasized his role as the god of disease and healing. He was called Apollo Akesios (Ἀκέσιος), Apollo Akestor (Ἀκέστωρ) or Apollo Epikuros (Ἐπικούριος) meaning healer.[50] He was also often called Iatros (Ἰατρός) which literally means doctor.[51] Apollo Alexikakos (Ἀλεξίκακος) cured disease, while Apollo Parnopius (Gr. Παρνόπιος) brought plagues and illness. Romans called him Medicus which corresponds to the Greek Iatros.

Apollo was the first Greek deity assimilated by the Romans. As there was no Italic deity with similar characteristics, his name was not changed.[52] Before becoming part of the Roman cult, Apollo found a place with the Etruscans as Apulu.[53] Roman kings of Etruscan origin worshiped him and consulted the oracle at Delphi.[54] Officially, Apollo arrived in Rome at the invitation of the Roman Senate as a deity that would repel the plague that devastated the city in 433 BCE.[55] In 431 BCE, as a sign of gratitude, Romans built a temple dedicated to Apollo Medicus "pro valetudine Populi Romani" in the Flaminia plains.[56] Apollo and other Greek deities were also present at the *lectisternium* in 399 BCE in order to stop a plague.[57] Roman Apollo Medicus was primarily a deity responsible for public health because he could keep the plague at bay. His characteristics as a deity responsible for personal health of individuals developed only later.
Apollo's cult has a long history so it went through different levels of popularity.[58] During the Roman Empire, the cult spread to the western provinces, especially Gaul and Britain, as well as along the Rhine limes where Apollo was identified with Celtic deities.[59]

Apollo was usually depicted as a naked young man with different attributes, most often with a bow and arrow, lyre or tripod. Each of the displayed attributes highlights one of his divine characteristics. When he is presented with a snake, one of his sacred animals, we can assume it refers to his healing aspect.

Healing ability was attributed to Apollo's sister Arthemis, or Diana as Romans called her. She was usually depicted as a young girl in a short dress, often accompanied by animals. Artemis was the goddess of hunt, wild animals, but also the patron of childbirth, the role which she had assumed while assisting in the birth of her brother Apollo.[60] She was worshiped under the name Artemis Locheia as a patron of midwives and childbirth. It was also believed that Artemis could protect women from the disease and physical pain, but could punish them as well. She was known for her use of herbs. The famous healing shrines dedicated to Artemis were in the Lusoi in Arcadia and Ephesus.[61] As Roman goddess Diana Arthemis maintained her role of patron to women and girls, especially when in labour. In Diana's shrine in Nemi women are paying her umbilical cord of his first–born child as a sign of gratitude for the safe delivery.[62]

ASCLEPIUS

Asclepius is mentioned in the Iliad as a warrior and "infallible physician", and together with his sons Machaon (Μάχάων) and Podalirius (Ποδαλείριος) he led a Thessaly army in the Trojan War on the side of the Greeks. He has the status of a hero, and like Odysseus, or Paris, divine abilities, but he is still a mortal. His elevation to the status of deity took place only in the second half of the 5th century BCE. Asclepius was the god of physicians and patients. He represents the rational aspect of Greek theology and was in sharp contrast with magic and superstition.[63] Asclepius not only represented the power of gods to heal, he also embodied the art of medicine. He possesses the skills, talent and attributes of a good physician. By rejecting Asclepius, an ancient physician actually dismissed all that medicine stood for.[64]

Asclepius was the son of the god Apollo and a nymph (or a mortal woman) named Coronis. Coronis was pregnant when she was killed by the goddess Artemis for being

60 Callimachus. Hymn to Arthemis. III. 46
61 Addison Jayne (1962: 313)
62 Hecker (1839: 358)

ASKLEPIJE

Asklepije se spominje u *Ilijadi* kao vješt ratnik i nepogrešiv liječnik, zajedno sa svojim sinovima Mahaonom (grč. Μάχάων) i Podalirijem (grč. Ποδαλείριος), s kojima je predvodio tesalsku vojsku pod Trojom. Ovdje on ima status heroja, poput Odiseja ili Parisa, posjeduje nadljudsku vještinu, ali je i dalje smrtnik. Njegovo izdizanje na status božanstva dogodio se tek u drugoj polovini 5. st. pr. Kr. Asklepije je bog liječnika i bog oboljelih. On predstavlja racionalni aspekt grčke teologije i u oštroj je suprotnosti s magijom i praznovjerjem.[63] Askelpije ne predstavlja samo moć bogova da liječe i spašavaju već utjelovljuje i umijeće medicine. On posjeduje vještinu, talent i atribute dobrog liječnika. Odbacivši Asklepija, liječnik odbacuje sve ono što zapravo medicina podrazumijeva.[64]

Asklepije je bio sin boga Apolona i nimfe (ili obične smrtnice) imenom Coronis. Coronis je zbog nevjere prema Apolonu, ubila božica Artemida, dok je Coronis bila trudna. Apolon se sažalio nad nerođenim djetetom, spasio ga je iz majčine utrobe i odveo kentauru Hironu.

Prema Homeru, Hiron je Asklepija odgojio i podučio vještini medicine, naučio ga je upotrebljavati lijekove i biljke za ublažavanje boli i zaustavljanje krvarenja te je Asklepije uz njega svladao vještinu korištenja noža pri ozljedama.[65] Dio vještine prenijela mu je i zmija, šapćući mu na uho tajna znanja. S vremenom je Asklepije znanjem i vještinom nadmašio ne samo učitelja Hirona nego i vlastitog oca. Postao je toliko vješt da je mogao uskrisiti mrtve i izbjeći vlastitu smrt.[66] Na nagovor Hada, boga podzemlja, Zeus je ubio Asklepija munjom nakon što je uskrisio heroja Hipolita i za taj čin primio novac. To je razljutilo Apolona koji je zauzvrat usmrtio Kiklope. Da bi zaustavio daljnju svađu, Zeus je vratio Asklepija iz mrtvih i dao mu mjesto na nebeskom svodu kao zviježđe Zmijonosac (grč. Ὀφιοῦχος, lat. Ophiuchus).[67]

Asklepije je bio oženjen Epionom (grč.Ἠπιόνη), grčkom božicom ublažavanja boli. Zajedno su imali pet kćeri i tri sina koji su na različite načine povezani s kultom liječenja. Mahaon je dodirom mogao izliječiti sve vrste rana, dok je Podalirije poznavao skrivene uzroke bolesti i njihov lijek.[68] Treći sin Asklepija i Epione je Telesfor (grč. Τελεσφόρος), koji je simbolizirao oporavak od bolesti.[69] Od Asklepijevih pet kćeri, Higieja (grč. Ὑγιεία) i Panakeja (grč. Πανάκεια) imale su istaknute uloge u lječilišnom kultu. Panakeja bila je božica univerzalnog lijeka jer je posjedovala napitak koji je mogao izliječiti bilo koju bolest. Akeso (grč. Ἀκεσώ) i Iaso (grč.Ἰησώ) su predstavljale različite aspekte oporavka od bolesti, dok je Aglaea (grč. Ἀγλαΐα) predstavljala personifikaciju zdravog izgleda.[70]

Sl. 9. Glava Asklepija s kosom i bradom punom uvojaka koja je bila dio manje statuete koja nije sačuvana. (Solin?, 2. – 3. st., K3)
~ Fig. 9 Head of Asclepius with hair and beard full of curls. It used to be a part of a smaller statue which is not preserved. (Solin?, 2nd – 3rd c., K3)

unfaithful to Apollo. Apollo took pity on the unborn child, saved him from his mother's womb and gave him to the centaur Chiron.

According to Homer, Chiron raised Asclepius and taught him the art of medicine. He taught him how to use medicine and plants to alleviate pain and stop bleeding. Asclepius also mastered the skill of using a knife to treat injuries.[65] He was taught the secret knowledge by a snake that whispered into his ear. Over time, Asclepius' knowledge and skills surpassed not only his teacher's but also his father's. He became so proficient that he could resurrect the dead and avoid his own death.[66] After he resurrected Hippolytus and received money for his act, Zeus killed Asclepius at Hades' request. This angered Apollo, who in turn killed Cyclops. To stop further quarrelling, Zeus brought Asclepius back from the dead and gave him a place in the sky as the Ophiuchus constellation (Ὀφιοῦχος).[67]

Asclepius was married to Epiona (Ἠπιόνη), the Greek goddess of pain relief. Together they had five daughters and three sons who were in various ways connected with the cult of healing. Machaon could cure all kinds of wounds with his touch, while Podairius knew the underlying causes of diseases and their cure.[68] Their third son was Telesphoros (Τελεσφόρος) who symbolized recovery from illness.[69] Of Asclepius' five daughters, Hygieia (Ὑγιεία) and Panacea (Πανάκεια) had prominent roles in the cult. Hygieia was the goddess of health, cleanliness and hygiene, while Panacea was the goddess of universal medicine because she possessed a potion that could cure any disease. Aceso (Gr. Ἀκεσώ) and Iaso (Gr. Ἰησώ) represented different aspects of recovery, and Aglaea (Gr. Ἀγλαΐα) personified the glow of good health.[70]

THE CULT OF ASCLEPIUS

In the Iliad, Asclepius and his sons commanded 30 ships from Trikka (today Trikala), Thessaly, so many ancient mythographers consider it his birth place, as well as the first place where Asclepius was wor-

63 Temkin, Temkin (1967: 225)
64 Galen. Commentary on the Hippocratic Oath. fr. 2A–E; Parker (1996: 184)
65 Schwab (2001); Manger (2005: 105)
66 Prema predaji božica Atena poklonila je Asklepiju Meduzinu krv koja je istekla nakon što joj je Perzej odsjekao glavu. Krv s desne strane glave bila je otrovna za ljude. Asklepije je iskoristio krv s lijeve strane kako bi liječio oboljele i oživljavao mrtve.
~ According to myth, goddess Athena gave Asclepius Medusa's blood, which was spilt after Perseus cut off the her head. The blood from the right side of the head was poisonous to humans. Asclepius took the blood from the left side to treat the sick and raise the dead.
Schwab (2001)
67 Higin (lat. Gaius Iulius Hyginus, c. 64. g. pr. Kr.–17. g. po. Kr.), rimski pisac i voditelj knjižnice na Palatinu, autor traktata o mitologiji Priče (lat. Fabulae) i astrološkog kataloga O astronomiji (lat. Poeticon Astronomicon).
~ Hyginus (Gaius Iulius Hyginus, ca 64 BCE – 17 CE), Roman writer and head of the library on the Palatine hill, author of treatises on mythology Stories (Fabulae) and astrological catalog De Astronomia (Poeticon Astronomicon).
Hyginus. Astronomica.2.14.; Barnett (2000: 138–140)
68 Homer. Ilijada. 2.273.; Schwab (2001); Manger (2005: 91)
69 Homer. Ilijada. 4.193
70 *Suda* (lat. *Suidas Lexicon*) je bizantski enciklopedijski leksikon iz 10. st. Sadrži preko 30 000 naziva, te se u objašnjenjima poziva na ranije antičke tekstove, od kojih su mnogi danas nepoznati.
~ *Suda* (*Suidas Lexicon*) is a Byzantine 10th century encyclopedic lexicon. It contains over 30,000 entires and explanations. It calls on earlier texts, many of which are now lost.
Smith (1884: 552); Wilson (2005: 335); Suda On-Line. α 849 (14.12.2016.)

ASKLEPIJEV KULT

U Ilijadi Asklepije i njegovi sinovi zapovijedaju s 30 brodova tesalskog polisa Trikke (današnja Trikala) pa ne čudi što mnogi antički mitografi kao mjesto Asklepijevog rođenja spominju Trikku te se smatra da je Asklepije prvo ondje bio štovan kao heroj.[71] Njegovi sinovi štovani su kao heroji i u Meseniji na Peleponezu.[72] Nije utvrđeno gdje i kada se Asklepije počeo štovati kao božanstvo, no kao logičan izbor nameće se Epidaur u kojem se nalazi njegov hram.

Asklepijevi hramovi, poznatiji kao asklepeioni (grč. Ἀσκληπιεῖον, lat. Aesculapīum) bili su lječilišni kompleksi u koje su hodočastili oboljeli ili oni koji su tražili savjet božanstva. Asklepeioni su imali brižno planirane prostorije posvećene liječenju. Građeni su na mjestima izvan gradova, obično na povišenim položajima s pogledom, u blizini posvećenog izvora vode.[73] Štovanje Asklepija u njegovim hramovima odvijalo se u dvije faze. U prvoj hodočasnik prolazi katarzu (grč. κόθαρσις), ritualno pročišćenje, koje se sastoji od niza kupki, posebne prehrane ili posta, izolacije ili uzimanja ljekovitih pripravaka. Dio prve faze je i prinošenje žrtve božanstvu u obliku novčanog priloga ili molitve. U drugoj fazi hodočasnik provodi noć u hramu i prolazi kroz inkubaciju. Hodočasnici bi spavali na podu hrama okruženi zmijama i psima, dvjema životinjama svetima Asklepiju, u posebnoj dvorani u hramu zvanoj *enkoimeteria*. Tijekom noći, Asklepije bi im se javio u snu te ih izlječio ili bi im dao upute za ozdravljenje. Ako se Asklepije ne bi pojavio u snu, svećenik bi ga pokušao interpretirati te bi dao hodočasniku upute koje mora slijediti. Ponekad bi hodočasnici ozdravili kada bi ih svete životinje u hramu dotaknule u snu. Ključan dio cijelog procesa bili su upravo snovi kojima su Grci pridavali veliku važnost. I sam Hipokrat prepoznao je važnost snova nadahnutih božanskom intervencijom i njihov utjecaj na boljitak pojedinca. Većina antičkih liječnika slijedila je istu nit razmišljanja.[74]

Najvažniji Asklepijev hram nalazio se u Epidauru u Argolidi, to je ujedno i najveći lječilišni kompleks u antici.[75] Osim u Epidauru Asklepije je posebno štovao u Trikali, na otoku Kosu i u Pergamu. O važnosti lječilišnog kompleksa u Epidauru svjedoče brojni arheološki nalazi, prvenstveno natpisi, votivne pločice i modeli dijelova ljudskog tijela kojima se moli ili zahvaljuje za ozdravljenje. Iz sredine 4. st. pr. Kr. potječu tri mramorne ploče na kojima su sačuvana imena 70–ak oboljelih, njihove povijesti bolesti te čudotvorna izlječenja. Asklepije je tako izliječio glavobolje, paralizu, nemoć tijela, ćelavost i sljepoću. Iako ženama nije bilo dozvoljeno rađanje u okolici hrama, mnoge su pacijentice tražile pomoć božanstva zbog neplodnosti ili preduge trudnoće.[76] Neka od izlječenja spominju i kirurške zahvate, kao npr. otvaranje trbušne šupljine ili vađenje stranog predmeta. Vrlo su detaljno opisani pa je vjerojatno da su se u hramu obavljali slični zahvati.[77] S vremenom su Asklepijevi hramovi sve više sličili suvremenom poimanju ideje sanatorija i bolnica u kojima se uz liječenje bolesnika odvija i

shiped as a hero.[71] His sons were worshiped as heroes in Messenia in the Peloponnesus.[72] It is not clear where and when Asclepius was first worshipped as a god, although his temple in Epidaurus seems like a logical choice.

Temples of Asclepius, or asclepieions (Ἀσκληπιεῖον, *Aesculapium*) were healing complexes visited by sick pilgrims or those who asked for advice from the gods. Asclepieions included carefully designed rooms dedicated to healing. They were built outside cities, usually on elevated positions with a view, in the vicinity of sacred springs.[73] The worship of Asclepius was carried out in two phases. During the first phase, the pilgrim passed through catharsis (Κόθαρσις), a ritual purification, which consisted of a series of baths, special diet or fasting, isolation or taking a "medicinal" remedy. Part of the first phase included leaving offerings in the form of money, contributions or prayer. During the second phase, pilgrims spent the night in the temple and went through the process of incubation. Pilgrims would sleep on the floor of the temple surrounded by snakes and dogs, two animals sacred to Asclepius, in a big sleeping hall called *enkoimeteria*. During the night, Asclepius would appear in their sleep and cure them or give them instructions for recovery. If Asclepius did not appear, the priest would try to interpret their dreams instead and gave further instructions for the pilgrim to follow. Sometimes pilgrims were healed if sacred animals touched them during their stay. A key part of the whole process were dreams which had great importance for the Greeks. Hippocrates himself recognized the importance of dreams that were inspired by a divine intervention, and their impact on the individual's well–being. Most ancient physicians followed the same line of reasoning.[74]

The most important asclepieion was located at Epidaurus in Argolis. It was also the largest healing complex in antiquity.[75] Apart from Epidaurus, Asclepius was worshipped in Trikka, on the island of Kos, and in Pergamum. The importance of the healing complex in Epidaurus is evident from numerous archaeological finds, mainly inscriptions, votive plaques and statues of the human body left by pilgrims. One of them are three marble slabs containing the names of more than 70 patients, their medical histories and miraculous healings dated in the 4th century BCE. Asclepius cured headaches, paralysis, weakness of the body, hair loss and blindness. Although women were not allowed to give birth in the vicinity of the temple, many female patients sought help in cases of infertility or prolonged pregnancies.[76] Some of the treatments mention surgical procedures, such as opening the abdominal cavity or removal of foreign objects. They are described in great detail so it is likely that similar procedures were performed in the temple.[77] Over time, temples of Asclepius started to resemble modern nursing homes and hospitals. Aside from treating the patients, they became places of learning.[78] The two most important people of ancient medicine started their medical training at famous asclepieions, Hippocrates on the island of Kos, and Galen in Pergamum.[79]

Numerous public ceremonies and festivals were dedicated to Asclepius. The most famous festival was *Megala Asklepeiain Epidaurus*, which took place in February every five years and lasted for nine days.[80]

Asclepius came to Athens shortly after the plague during the Peloponnesian War. A temple was dedicated to him in 420 or 419 BCE on the southern slope of the Acropolis and he shared it with his daughter, Hygieia. At the same time, votive offerings to Athena Hygeia, the former healing deity on the Acropolis, stopped.[81] By the middle of the 4th century BCE, the cult of Asclepius spread through Greece and neighbouring countries, all the way to Sicily, usually replacing local deities associated with healing. In 295 BCE, a serious plague ravaged Rome.[82] After three years, Romans consulted the Sibylline books which reported that only the god of medicine from Epidaurus could stop the disease. In 293 BCE Roman Senate sent an official delegation to

71 Edelstein i Edelstein (1998: 243)

72 Pauzanije (grč. Παυσανίας, c. 110. –180.), grčki putopisac i geograf, autor Opisa Grčke (grč. Ἑλλάδος περιήγησις, lat. *Hellados Periegesis*).
~ Pausanias (Παυσανίας, ca 110 –180 CE), Greek traveler and geographer, author of Description of Greece (Ελλάδος περιήγησις, *Hellados Periegesis*).
Pausanias. Description of Greece. 3.26.9

73 Risse (1990: 56); Manger (2005: 104)

74 Temkin, Temkin (1967: 241)

75 Hram je građen između 380. i 375. g. pr. Kr., a arhitekt i graditelj je bio Teodot. Prije posvećenja Asklepijevog hrama na istom se mjestu štovao Apolon. Svetište u Epidauru činio je kompleks hramova, uz Asklepija; tu su se nalazili i hramovi posvećeni Afroditi i Artemidi. Od ostalih građevna ističu se kupališta, veliki teatar i impozantni tolos.
~ The temple was built between 380 and 375 BCE. The architect and builder was Theodotus. Before the consecration of the temple of Asclepius, Apollo was worshiped at the same place. The sanctuary in Epidaurus consisted of several temples and there were also temples dedicated to Aphrodite and Artemis. Other buildings included baths, a great theatre and an imposing Tholos.
Ducati (1939: 375–376)

76 Peek (1969, 1972)

77 Askitopoulou et al. (2002: 11–17)

78 Addison Jayne (1962: 300)

Sl. 10. Gema s prikazom kentaura Hirona, Asklepijevog učitelja, pored kojeg stoji Ahilej. (Sisak, 1. – 4. st., K10)
~ Fig. 10 Gem depicting centaur Chiron, teacher to Asclepius, and Achilles standing next to him. (Sisak, 1st – 4th c., K10)

transfer medicinskog znanja.[78] Tako su dvije najvažnije osobe antičke medicine svoju medicinsku naobrazbu započele u poznatim Asklepijevim svetištima, Hipokrat u asklepeionu na otoku Kosu, a Galen u pergamskom asklepeionu.[79]

Asklepiju su bile posvećene i brojne javne svetkovine i festivali, a najpoznatiji festival bio je *Megala Asklepeia*, koja se održavala u Epidauru svakih pet godina tijekom veljače u trajanju od devet dana.[80]

Asklepije je kao božanstvo u Atenu stigao nedugo nakon epidemije kuge tijekom Peloponeskog rata. Na južnoj padini akropole posvećen mu je hram 420. ili 419. g. pr. Kr. koji je dijelio sa svojom kćeri, Higiejom. U isto vrijeme prestaju zavjetne posvete Ateni Higieji, ranijem lječilišnom božanstvu na Akropoli.[81] Do sredine 4. st. pr. Kr. Asklepijev se kult proširio diljem Grčke i susjednih zemalja, sve do Sicilije, najčešće zamjenjujući starija božanstva povezana s liječenjem.

Godine 295. pr. Kr. Rimom je harala teška epidemija.[82] Nakon tri godine koliko se bolest zadržala konzultirane su Sibiline knjige te je Rimljanima objavljeno da samo bog liječništva iz Epidaura može zaustaviti bolest. Rimski je senat 293. pr. Kr. poslao službeno izaslanstvo u Grčku. Asklepije je pristao pomoći te je u liku zmije i skulpture božanstva prenesen brodom u Italiju. Prilikom pristajanja u Rimu, zmija je napustila brod i našla utočište na Tiberini, otoku usred Tibera. Rimljanima je to bio siguran znak da na otoku trebaju podići svetište grčkom božanstvu. Prema antičkim izvorima epidemija se povukla čudesnom brzinom.[83] Hram je posvećen 291. g. pr. Kr., a dan posvećenja određen je kao datum održavanja godišnje svetkovine u čast božanstva koje je zaustavilo kugu u Rimu.[84] Uz Asklepijevu skulpturu u hramu na Tiberini postavljene su i one Higieje (lat. Salus) i Telesfora.[85]

Važno je primijetiti kako je dolazak Asklepijevog kulta u Rim bio službena državna odluka i njome Asklepije postaje službeno rimsko božanstvo. To ne znači da Asklepije u Italiji nije bio štovan i ranije, iako ranije svetište posvećenu Asklepiju nije arheološki potvrđeno.[86] Po svom dolasku Asklepije

Greece. Asclepius agreed to help and was transported by boat in the form of a snake and sculpture. When they arrived in Rome, the snake abandoned the ship and took refuge on the Tiber Island. Romans saw it as a sign to erect a shrine to the Greek deity on the island. According to ancient sources, the plague soon disappeared.[83] The temple was dedicated in 291 BCE. The day of the consecration was defined as the date for the annual feast in honour of the deity that stopped the plague in Rome.[84] The temple holds the statues of Asclepius, Hygieia (Salus) and Telesphoros.[85]

It is important to note that the arrival of Asclepius in Rome was the official decision of the state making Asclepius an official Roman deity. This does not mean that Asclepius was not worshiped in Italy prior to 293 BCE, although earlier sanctuaries dedicated to Asclepius have not been confirmed archaeologically.[86] Upon his arrival, Asclepius became the main healing deity in Rome. He represented a completely new era in the medical history of Rome, because he was the first deity responsible for personal health and the health of the Roman nation.[87]

Soon, the new cult replaced traditional Roman gods connected with disease and healing, including Apollo Medicus who arrived two centuries earlier. Together with Aesculapius, other aspects of his cult come to Rome, Asclepiads (priest–physicians), practice of sleeping in the temple and the interpretation of dreams, god's sacred companions of the deity, dogs and snakes, etc. The cult grew in importance at the beginning of the 1st century CE, especially during the reign of emperor Pius. The emperor took particular interest in the cult, renewed older sanctuaries dedicated to the god and placed the image of Aesculapius on imperial coins.

Shrines, temples, sacred springs and sculptures dedicated to Asclepius/Aesculapius and his entourage were erected throughout the Roman Empire, from Britain to Asia Minor. The cult of Asclepius remained popular throughout antiquity, and part of the complex in Epidaurus was still operating in early 5th century, but as a Christian healing place.[88]

There are numerous representations of Asclepius as sculptures, gems, coins, frescoes, or on pottery. Asclepius is usually depicted as a bearded man with a naked torso resting on a rod around which a snake, his sacred animal, is wrapped. Asclepius is also sometimes shown seated on a throne receiving supplicants.

AESCULAPIUS AND CARACALLA IN VARAŽDINSKE TOPLICE

Archaeological finds confirm that Roman settlement of Aquae Iassae (Varaždinske Toplice) was a centre for healing, worship and prophecy from the 1st to the 4th century. This is supported by a marble slab found in 2011, the work of a prominent master of exceptional artistic quality, with a relief depicting the healing deities Aesculapius, Salus and Telesforos (Inv. No. A–8212). An inscription runs above and below the relief dedicated to the Emperor Caracalla with an official dedication to the emperor's health and victory. The donor of the relief was Lucius Alfenus Avitianus, a provincial administrator of Arabia and legates of the X legion. Caracalla visited various shrines dedicated to his favourite gods after he became ill in 213. During the punitive expedition against Alamani tribes, he desperately sought help from Apollo, Asclepius and Serapis sending votive gifts to the deities in various shrines, or personally visiting shrines in the hope of a cure. Regardless if Caracalla personally visited Aqua Iassae or just sent his envoy, the quality of the marble slab and the type of inscription indicate that this was an official request for the emperor's recovery, most likely initiated by the emperor. Certain peculiarities in the image of Aesculapius suggest that the god represents Emperor Caracalla himself.[89]

79 Nuland (1988: 4)

80 Tijekom svetkovine prinošene su žrtve Apolonu, Asklepiju, Artemidi i Leti, izlagana je sveta Asklepijeva slika, koja je čuvana u celi hrama, održavana su atletska natjecanja i utrke kola, brojne gozbe, predstave u čast bogova, itd. Poznate svetkovine u čast Asklepija održavane su na otoku Kosu, u Pergamu, Efezu, u Lidiji, Kilikiji, Frigiji, Eubeji i drugdje.
~ During the festival, offerings were given to Apollo, Asclepius, Artemis and Leto. Asclepius' image, stored in the temple's cella, was shown to the public. Athletic competitions, chariot races, numerous banquets, and performances in honor of the gods were held during the festival. Well–known festivals in honor of Asclepius were held on the island of Kos, in Pergamum, Ephesus, Lydia, Cilicia, Phrygia, Euboea and elsewhere.
Pausanias. Description of Greece. 1.31.6; Addison Jayne (1962: 300)

81 Parker (1996: 176)

82 Orlin (2010: 63)

83 Valerije Maxim (lat. Valerius Maximus), rimski pisac, autor zbirke anegdota Poznata djela i izreke (lat. *Factorum ac dictorum memorabilium libri IX*).
~ Valerius Maxim was a Roman writer and author of a collection of anecdotes Memorable deeds and sayings (*Factorum ac Dictorum memorabilium libri IX*).
Valerius Maximus. Factorum ac dictorum memorabilium libri IX.

84 Addison Jayne (1962: 466)

85 Orlin (2010: 64)

86 Nutton (2004: 160)

je postao glavno liječničko božanstvo. Njegovo štovanje, kao prvog božanstva podjednako odgovornog i za osobno zdravlje i za zdravlje rimske nacije, predstavlja posve novu epohu u medicinskoj povijesti Rima.[87]

Ubrzo je novi kult potisnuo brojna tradicionalna rimska božanstva vezana uz bolest i izlječenje, pa i samog Apolona Medicusa, koji je stigao dva stoljeća ranije. Zajedno s Eskulapom u Rim su došli i drugi aspekti njegova kulta, poput asklepijada (svećenika–liječnika), prakse spavanja u hramu i tumačenja snova, sveti pratitelji, psi i zmije koji su boravili u hramu itd. Kult jača s početkom nove ere, a posebno dobiva na važnosti za vrijeme vladavine Anonina Pija. Car se posebno zanimao za kult, obnavljao je starija svetišta posvećena božanstvu te je prikaz Eskulapa stavio na svoj carski novac.

Svetišta, hramovi, sveti izvori i skulpture posvećene Asklepiju/Eskulapu i njegovoj pratnji podizani su diljem Rimskog Carstva, od Britanije do Male Azije. Asklepijev je kult zadržao svoju važnost tijekom cijele antike, o čemu svjedoči i podatak da je dio svetišta u Epidauru funkcionirao još početkom 5. st., ali kao kršćansko lječilište.[88]

Brojni su prikazi Asklepija u skulpturi, na gemama, novcu, freskama ili pak na keramici. Asklepije se najčešće prikazuje kao bradati muškarac nagog torza, oslonjen na štap oko kojeg je omotana njegova sveta životinja, zmija. Ponekad je Asklepije prikazan kako sjedi na prijestolju i prima oboljele.

ESKULAP I KARAKALA U VARAŽDINSKIM TOPLICAMA

Arheološki nalazi potvrđuju kako je rimsko naselje Aquae Iasae (Varaždinske Toplice) bilo lječilišni, kultni i proročki centar od 1. do 4. st. Tome u prilog ide nalaz mramorne ploče iz 2011. godine, djelo vrhunskog majstora iznimne umjetničke kvalitete, s reljefnim prikazom božanstva zdravlja Eskulapa, Salus i Telesfora (Privremena pohrana AMZ, VTks–17). Iznad i ispod reljefa nalazi se natpis posvećen caru Karakali s vrlo službenom posvetom za carevo zdravlje i pobjede, a donator je bio Lucius Alfenus Avitianus, upravitelj provincije Arabije i legat X. legije.

Karakala, koji je i inače obilazio razna svetišta svojih omiljenih bogova, nakon što se razbolio 213. g. tijekom kaznene ekspedicije na Alamane, očajnički je tražio pomoć od Apolona, Asklepija i Serapisa te je tijekom putovanja slao zavjetne darove tim božanstvima u razna svetišta, u koja je i osobno odlazio u nadi da će ozdraviti. Bez obzira na to je li Karakala osobno posjetio Aque Iasae ili je to umjesto njega učinio njegov izaslanik, karakter mramorne ploče, kvaliteta reljefa i tip natpisa ukazuje na to da je riječ o službenoj molbi za carevo ozdravljenje, najvjerojatnije postavljenoj na carevu osobnu inicijativu. Određene posebnosti u prikazu samog Eskulapa daju nam, pak, naslutiti da je na ovom reljefu prikazan sam car Karakala.[89]

Sl. 11. Mramorna ploča s reljefnim prikazom božanstva zdravlja. Eskulap u ruci drži štap oko kojeg je omotana zmija. Salus u desnoj ruci drži zmiju, a u lijevoj jaje. Između njih stoji Telesfor. (VTks–17, Varaždinske Toplice, 213./214. g.)
~ Fig. 11 Marble votive plate with reliefs of healing deities. Asclepius is holding a snake–entwined staff, and Salus a snake in her right hand and an egg in her left. Telesphoros is standing between them. (VTks–17, Varaždinske Toplice, 213/214 CE)

HYGIEIA

Apart from Asclepius, the most important person of the healing cult was his daughter Hygieia (Ηγιεία or Ηγεία, *Hygea* or Hygiene). Hygieia personified health, cleanliness and hygiene. While Asclepius was associated with curing illnesses, Hygieia represented good health and disease prevention. Hygeia did not have healing skills, nevertheless she was raised to the rank of divinity like her father.[90]

The worship of Hygieia developed parallel with the worship of the divine Asclepius. Hygeia arrived in Athens together with Asclepius, and the deity worshiped before them was Athena Hygieia. She was also worshiped in Epidaurus, Athens, on Kos, in Corinth, Pergamum and Argos. Pausanias wrote that women attached locks of their hair and pieces of clothing to Hygeia's statue at Corinth, and that the same practice was known on Pharos.[91]

On Greek statues and vases, Hygeia is shown as a young, slim and active young woman. She usually follows Asclepius, standing next to him and receiving supplicants. She is often accompanied by her brother Telesphoros. When shown alone, she often holds or feeds a snake.[92]

87 Addison Jayne (1962: 255)
88 Nutton (2004)
89 Kušan Špalj (2015: 66–78)

HIGIEJA

Uz samog Asklepija najvažnija osoba lječilišnog kulta njegova je kći Higieja (grč. Ὑγιεία or Ὑγεία, lat. *Hygēa* or Hygīa), koja personificira zdravlje, čistoću i higijenu. Dok je Asklepije više bio povezan sa samim izlječenjem od bolesti, Higijeja je predstavljala dobro zdravlje i prevenciju bolesti. Sama Higieja nije imala izlječiteljske sposobnosti, ali je bila izdignuta na rang božanstva.[90]

Kult štovanja Higieje razvio se usporedno sa štovanjem božanskog Asklepija. Zajedno s Asklepijem stiže u Atenu gdje su prije dolaska ovih božanstava, štovali Atenu Higiju. Poznato je da se štovala u Epidauru, Ateni, Kosu, Korintu, Pergamu i Argosu. Pauzanije navodi da su žene u hramu u Titani kod Korinta i na Farosu Higiejinoj skulpturi prilagale pramenove kose i dijelove odjeće.[91]

Higieja je prikazana kao mlada, vitka i aktivna djevojka najčešće kako prati Asklepija, stoji pokraj njega i prima zagovaratelje. U Higiejinoj pratnji često se nalazi njezin brat Telesfor. Kada je prikazana sama, često drži ili hrani zmiju.[92]

Rimljani su također prihvatili štovanje Higieje. Ona je jedino božanstvo povezano s Asklepijevim kultom koje se udomaćilo u Rimu. Isprva su je poistovjetili s božicom Valetudo koja je predstavljala privatni, osobni vid zdravlja. S vremenom se i Higieju i Valetudo sve više poistovjećivalo sa Salus, rimskom božicom sigurnosti, zdravlja i dobrobiti, kako osobne, tako i društvene. Salus predstavlja staro italsko božanstvo sabinskog porijekla, u početku povezano s dobrobiti rimskog grada i države.[93] Tijekom epidemije u Rimu 180. g. pr. Kr. javlja se javna svetkovina i prinošenje žrtve u čast Apolona, Asklepija i Salus.[94]

Prikazi božice Salus česti na rimskom novcu, posebice onom carskog razdoblja. Prikazana je kako stoji ili sjedi na tronu te u jednoj ruci drži pateru iz koje poji zmiju. Ponekad je zmija omotana oko trona ili oko Salusine ruke. Najstariji takav prikaz božice Salus s Asklepijevom zmijom nalazi se na novcu kasne Republike.[95]

Sl. 12. Gema izrađena od narančastog karneola koja prikazuje božicu Salus sa zmijom i paterom u ruci. (Sisak, 1. – 4. st., K11)
~ Fig. 12 Carnelian gem depicting goddess Salus with a snake and a patera in her hand. (Sisak, 1st – 4th c., K11)

Romans also worshiped Hygeia. She was the only deity associated with the cult of Asclepius which was accepted in Rome. At first, she was identified with the goddess Valetudo who represented personal health. Over time, Hygeia and Valetudo became increasingly identified with Salus, the Roman goddess of individual and social safety, health and welfare. Salus represented the old Italic deity of Sabine origin, initially linked to the well–being of the Roman city and state.[93] During the epidemic in Rome in 180 BCE, a public feast with sacrificial rites was held in honour of Apollo, Asclepius and Salus.[94]

Representations of Salus were very common on Roman coins, especially during the imperial period. She was shown standing or sitting on a throne, and, in one hand, holding a patera to feed a snake. Sometimes the snake is wrapped around the throne or around Salus' hands. The oldest display of Salus with Asclepius' snake is on late Republican coins from the mid–1st century BCE.[95]

HERACLES

Heracles was the son of Zeus and Alcmene, and the most famous hero in ancient mythology. Even before he was born, he drew the wrath of the goddess Hera who desperately tried to postpone his birth. Because of Hera's interference, Heracles was subject to fits of brief madness and epilepsy. During antiquity, epilepsy was often called the disease of Heracles.[96]

Heracles had healing abilities, mentioned by Hesiod, which were unfortunately overshadowed by his other achievements.[97] Temples were erected throughout ancient Greece to celebrate his role in healing and eliminating disease.[98] He was associated with hot sulphur springs, and several herbs were named after him.[99] In the Peloponnese, a satisfied patient erected a fountain in his honour, celebrating Heracles as a powerful healer "who helped him unlike any physician".[100] Together with Hermes, he was the protector of gymnasia and palestra.[101]

The cult of Heracles arrived in Rome as early as 6th century BCE. In the 5th century BCE, Romans had already accepted that Heracles had visited Rome as part of his Twelve Labours.[102] According to tradition, even the first king Romulus made sacrificed to Heracles, and the oldest shrine in his honour, Ara Maxima, was located near the Forum Boarium.[103] The first official mention of Heracles in Rome is in connection with the plague in 399 BCE when he was part of the *lectisternium*.[104]

In Rome, Heracles, also known as Hercules, kept his healing abilities. He was linked with thermal springs as evidenced by inscriptions and votive plaques. *Hercules Domesticus* was responsible for the health of the Roman domus and was supposed to hold all diseases at bay. He was also called *Salutífer* and *Salutaris* (the one who brings health), and goddesses Febris and Orbona were mentioned as part of his entourage.[105]

Heracles was often shown dressed in a lion's skin with a club in his hand.

90 Addison Jayne (1962: 333)
91 Pausanias. Description of Greece. 2.11.6; Athenaeus. Deipnosophists. xv.702
92 Slavni antički kipari poput Skopasa (c. 395. – 350. g. pr. Kr.) i Briaxisa (c. 350. g. pr.Kr.) izradili su Higiejine skulpture, dok joj je Arifron u 4. st. pr. Kr. spjevao himnu.
~ The famous ancient sculptors such as Scopas (c. 395 – 350 BCE) and Briaxis (c. 350 BCE) carved her sculptures, while Ariphron composed her a hymn in the 4th century BCE.
93 Još u 4. st. pr. Kr. u Rimu joj je posvećen hram kao *Salus Publica Populi Romani* (zdravlje i sigurnost rimskog naroda).
~ Romans dedicated her a temple as *Salus Publica Populi Romani* (health and safety of the Roman people) in the 4th century BCE. Livy. Ab Urbe Condita. IX.43; Addison Jayne (1962: 333); Orlin (2010: 61)
94 Livy. Ab Urbe Condita. XL, 37
95 Köhler (1965) (01. 11. 2016.)

HERAKLO

Najslavniji junak antičke mitologije, Heraklo, imao je iscjeljiteljske moći, koje su zasjenila njegova ostala postignuća. Sin boga Zeusa i Alkmene, već je prije rođenja navukao na sebe bijes božice Here, koja je svim silama pokušala odgoditi njegovo rođenje. Zbog Herinog uplitanja Heraklo je bio podložan napadajima kratkotrajnog ludila i napadajima epilepsije, koja se često nazivala Heraklova bolest.[96]

Hesiod spominje Heraklove iscjeljiteljske sposobnosti.[97] Diljem stare Grčke podizana su mu svetišta koja su slavila njegovu ulogu u liječenju i otklanjanju bolesti.[98] Osobito ga se povezivalo s toplim sumpornim izvorima te su po njemu imenovane ljekovite biljke.[99] Na Peloponezu mu je zadovoljan pacijent podigao fontanu, kao moćnom izlječitelju "koji mu je pomogao za razliku od liječnika." Zajedno s Hermesom bio je zaštitnik gimnasiuma i palestra.[101]

Heraklov kult stiže u Rim vrlo rano, već u 6. st. pr. Kr., dok je već u 5. st. pr. Kr. prihvaćena tradicija prema kojoj je Heraklo posjetio Rim u sklopu svojih zadataka.[102] Prema predaji čak je i prvi kralj Romul prinosio žrtve Heraklu, a najstarije Heraklovo svetište Ara Maxima nalazilo se blizu Foruma Boariuma.[103] Prvo službeno Heraklovo spominjanje u Rimu dovodi se u vezu s haranjem pošasti 399. g. pr. Kr. kada je pozvan na *lectisterniumu* da s drugim božanstvima zaustavi epidemiju.[104]

U Rimu je Heraklo, poznat kao Herkul, preuzeo dio lječilišnih odgovornosti koje je imao i u Grčkoj. Povezivalo ga se s termalnim lječilišnim izvorima, o čemu svjedoče pronađeni natpisi i votivne pločice. Hercules Domesticus bio je odgovoran za zdravlje doma i trebao je tjerati sve bolesti. Nadijevali su mu se pridjevi Salutifer i Salutaris (onaj koji donosi zdravlje) te se božice Febris i Orbona spominju kao dio njegove pratnje.[105]

Herakul se najčešće prikazivao odjeven u lavlju kožu s toljagom u ruci.

PATULJAK TELESFOR

Treći sin Asklepija i Epione je Telesfor (grč. Τελεσφόρος), koji je simbolizirao oporavak od bolesti.[106] Najčešće ga se prikazuje kao malenog dječaka ili patuljka zaogrnutog u plašt ili ogrtač s kapuljačom na glavi. Uglavnom se pojavljuje u pratnji obitelji, najčešće između oca Askelepija i sestre Higijeje ili samo kao pratnja Higijeji. Rjeđe se prikazuje samostalno. U fundusu Arheološkog muzeja u Zagrebu nalazi se keramička polustatua Telesforosa na postolju (inv. br. A–8212) visine 7 cm, koja potječe iz Siska.

Sl. 13. Brončana figura Herakla kojem je u desnoj ruci sačuvan kraj toljage, dok u lijevoj drži tri hesperidske jabuke. (Sisak, 2. st., K5)
~ Fig. 14 Bronze statue of Hercules holding a club in his right hand, and three apples of the Hesperides in his left. (Sisak, 2nd c., K5)

DWARF TELESPHOROS

The third son of Asclepius and Epione was Telesphoros (Τελεσφόρος) who symbolized recovery from disease.[106] He was usually portrayed as a little boy or a dwarf wrapped in a mantle or cloak with a hood. He mostly appeared in the company of his family, often between his father Asclepius and sister Hygieia, or just with Hygieia. He was rarely shown alone. The Archaeological Museum in Zagreb houses a ceramic statuette of Telesphoros (Inv. No. A–8212). The statuette is 7 cm tall and originates from Sisak.

Sl. 14. Keramička polustatueta Telesfora, koji se najčešće nalazi u pratnji Asklepija i Higijeje, ogrnutog u plašt s kukuljicom. (Sisak, poč. 3. st., K6)
~ Fig. 13 Terracotta figurine of Telesphoros. He is most often depicted with Asclepius and Hygieia, and wearing a hooded cloak. (Sisak, beginning of 3rd c., K6)

96 Pausanias. Description of Greece. 10.3.1; Addison Jayne (1962: 329)
97 Hesiod. Postanak bogova. 527; Gruppe (1906: 453–454)
98 Pausanias. Description of Greece. 7.5.5; Spiegel (1887: 138)
99 Jedna od biljaka koja se povezuje s Heraklom je kukurijek (rod Helleborus). U antici se koristio u slučajevima paralize, gihta, a Hipokrat ga je koristio kao laksativno sredstvo.
~ One of the plants that are associated with the Hercules is hellebore. In ancient times it was used in cases of paralysis and gout, while Hippocrates used it as a laxative.
100 Nutton (2004: 35)
101 Gymnasium (grč. γυμνάσιον) predstavlja prvotnu sportsku ustanovu u antičkoj Grčkoj u kojoj su se mladići pripremali za sportska natjecanje. Palestra (grč. παλαίστρα) je bila prostor za vježbanje hrvanja. Palestre su funkcionirale u sklopu gymnasiuma ili samostalno, dok je svaki gymnasium morao imati palestru.
~ Gymnasium (Γυμνάσιον) was the original sports institution in ancient Greece, where young men preparied for competition. Palestra (Παλαίστρα) was a place to practice wrestling. Palestra functioned within the gymnasium or independently, and each gymnasium had to have a palestra.
Pausanias. Description of Greece. 4.32.1
102 Wiseman (1995: 39, 41); Beard et al. (1998: 188–189)
103 Orlin (2010: 33)
Rimljani su podigli žrtvenik nepobjedivom Herkulu (lat. Herculis Invicti Ara Maxima) na mjestu gdje je prema predaji slavni junak ubio Kakusa, diva koji je terorizirao Aventin prije osnutka Rima.
~ Romans built an altar to Invincible Hercules (*Herculis Invicti Ara Maxima)* on the site where, according to legend, the famous hero killed Cacus, the giant who terrorized the Aventine hill before Rome was founded.
104 Livy. Ab Urbe Condita. V.13; Lipka (2009: 76)
105 Febris je bila božanstvo nižeg ranga i bila je utjelovljenje vrućice tj. groznice. Uzrokovala je vrućicu kao kaznu za grijeh, ali ju je također i mogla otkloniti. Febris je također često bila medijator između oboljelih i bogova, posebice Jupitera i Junone. U kasnijim periodima posebice ju se zazivalo u slučajevima malarijske groznice, jer se vjerovalo da može otjerati bolest .
Orbona predstavlja božanstvo nižeg ranga povezano s djecom i plodnošću. Vjerovalo se da Orbona pomaže roditeljima koji se ostali bez djece.
~ Febris was the deity of lower rank and the embodiment of the fever. Febris caused fever as a punishment for sins, but was also able to stop it. Febris was often a mediator between patients and gods, especially Jupiter and Juno. In later periods, she was invoked in cases of malaria, because it was believed that she could repel the disease.
Orbona represents a lower ranked divinity associated with children and fertility. It was believed that Orbona helped parents who lost their children.
Addison Jayne (1962: 429)
106 Homer. Ilijada. 4.193

MINERVA MEDICA

Najvažnija je rimska božica povezana s liječništvom bila Minerva, kojoj je nadjenuto ime Medica, što je ženski oblik latinske riječi liječnik (Medicus). Minerva je bila staro etrursko božanstvo (Menrva) koje su Rimljani, s vremenom, izjednačili s grčkom božicom Atenom. Tako su etrurskoj zaštitnici zanata i obrta pridodane Atenina mudrost i ratnička vještina.[107] Zajedno s Jupiterom i Junonom, Minerva je bila dio kapitolijske trijade, jednog od najstarijih kultova Rima. Minerva je prikazivana kao mlada djevojka odjevena u dugi himation s kacigom na glavi. U rukama najčešće drži štit i koplje.

Minerva Medica bila je titularna zaštitnica medicine i liječnika. Minervi se pripisivalo administriranje lijekova, liječenje bolesti uha pa čak i sprječavanje gubitka kose. Jedne od životinja koje su se dovodile u vezu s božicom, bile su pijavice kojima je Minerva udijelila moć izlječenja.[108] Ciceron spominje da je Minervi Medici tijekom razdoblja Republike na Eskvilinu podignut hram, čiji ostaci nisu arheološki potvrđeni.[109]

Minerva Medica štovana je diljem Rimskog Carstva. Iz Varaždinskih Toplica (Aquae Iasae) potječe skulptura Minerve koja je veliča kao božicu liječenja i zdravlja. Skulptura potječe iz sredine 2. stoljeća. Ovaj nalaz potvrđuje činjenicu da su Rimljani Minervu povezivali s ljekovitim izvorima od kojih je možda najpoznatije rimsko lječilište u današnjem Bathu u Engleskoj (Aquae Sullis).[110]

MINERVA MEDICA

The most important Roman goddess associated with healing was Minerva. She was given the name Medica, which is the feminine form of the Latin word physician (Medicus). Minerva was the old Etruscan deity (Menrva) that Romans eventually equated with the Greek goddess Athena. Thus Athena's wisdom and warrior skills were attributed to Etruscan patron of crafts and trade.[107] Along with Jupiter and Juno, Minerva was part of the Capitoline Triad, one of the oldest cults in Rome. Minerva was depicted as a young girl dressed in a long chiton with a helmet on her head. She usually held a shield and a spear in her hands.

Minerva Medica was the titular patron of medicine and physicians. Minerva administered medicines, treated diseases of the ear and even prevented hairloss. One of the animals connected with the goddess were leeches to which Minerva bestowed the power of healing.[108] Cicero mentioned that during the Republican period a temple dedicated to Minerva Medica was erected on the Esquiline Hill, but temple's remains have not been archaeologically confirmed.[109]

Minerva Medica was worshiped throughout the Roman Empire. From Aquae Iasae (Varaždinske Toplice) originates a sculpture of Minerva, which glorifies her as the goddess of healing and health. The sculpture originates from the mid–2nd century CE. This finding confirms the fact that Romans associated Minerva with healing springs, of which perhaps the most famous was in today's Bath in England (Aquae Sullis).[110]

Sl. 15. Mramorni kip božice Minerve u prirodnoj veličini na postamentu s natpisom. S lijeve strane božice nalazi se štit i djelom sačuvana zmija. (ZMVT, inv. br. A–1130, Varaždinske Toplice, 2. st.)
~ Fig. 15 Marble life–size statue of goddess Minerva on a pedestal with an inscription. A shield with a partially preserved snake is on her left. (ZMVT, Inv. No. A–1130, Varaždinske Toplice, 2nd c.)

107 Barnett (2000: 274)
108 Addison Jayne (1962: 434)
109 Ciceron (lat. Marcus Tulllius Cicero, 106. – 43. g. pr. Kr.), rimski političar, senator, konzul, odvjetnik, filozof i jedan od najpoznatijih govornika.
~ Cicero (lat. Marcus Tullius Cicero, 106 – 43 BC), Roman politician, senator, consul, lawyer, philosopher and one of the most popular orators.
Ciceron. De Divinatione. II. 123
110 Kušan Špalji (2015: 66)

RAZVOJ MEDICINSKE MISLI KLASIČNE GRČKE

~

THE DEVELOPMENT OF MEDICAL THOUGHT IN CLASSICAL GREECE

HIPOKRAT

Gotovo ni jedna povijesna osoba koja je živjela u antičko vrijeme danas nema takav utjecaj kakav ostavlja Hipokratov lik i djelo. Neupitno najpoznatija figura u povijesti medicine, možda i povijesti znanosti uopće, Hipokrat nosi prestižni naslov oca zapadne medicine. Njegov život i rad predstavlja polaznu točku razvoja medicine u pravu znanstvenu disciplinu koja se temelji na promatranju i činjenicama.

S obzirom na značenje koje Hipokrat ima u razvoju, kako antičke, tako i moderne medicine, o njegovom se životu zna iznenađujuće malo. Neki autori ne samo da dovode u pitanje njegov rad i njegova djela, već dvoje je li Hipokrat kakvog danas znamo ikada postojao.[111] Njegovom su se biografijom bavili već antički autori te nam većina osobnih podataka o Hipokratu dolazi upravo od njih.[112]

Većina se povjesničara slaže da se Hipokrat rodio oko 460. g. pr. Kr. na otoku Kosu, u čijem se asklepeionu najvjerojatnije i počeo baviti medicinom.[113] Svoje podrijetlo s očeve strane Hipokrat je povezivao s Asklepijem, bogom liječenja, a s majčine strane s Heraklom.[114] Iako je najveći dio života proveo u Ateni, bavljenje medicinom vodilo ga je diljem Grčke. Manje je siguran podatak kako je i gdje umro, iako većina autora navodi da je doživio duboku starost te da je umro oko 370. g. pr. Kr. u Larisi (Tesalija).[115]

Krute biografske činjenice Hipokratovog života, kako god nesigurne bile, ne mogu umanjiti njegovo značenje za razvoj zapadne medicine. Ono što nam trajno ostaje u naslijeđe iz Hipokratovog vremena, glavne su značajke medicinskog pravca koji je oblikovao znanost stoljećima, sve do renesanse. Riječ je o teoriji tjelesnih tekućina, humoralizmu, koji je prevladavao u medicini, filozofiji pa čak i umjetnosti kroz antiku i srednji vijek.

Sl. 16. Različiti oblici grčke keramike koja je mogla, između ostaloga, poslužiti liječnicima kod medicinskih zahvata. (južna Italija, 4. – 3. st. pr. Kr., K30 – 37)
~ Fig. 16 Different forms of Greek ceramic vessels that could have also been used in medicine. (South Italy, 4th – 3rd century BCE, K30 – 37)

HIPPOCRATES

There is not a historical person from antiquity who has had so much influence as Hippocrates and his work. Unquestionably, the most famous figure in the history of medicine, perhaps in the history of science as well, Hippocrates bears the prestigious title of being called the "Father of Western medicine." His life and work represent the starting point in the development of medicine into a proper scientific discipline based on observations and facts.

When we consider the importance Hippocrates has had on the development of ancient and modern medicine, surprisingly little is known about his life. Some authors not only question his life and work, but wonder whether Hippocrates, as we know him today, had ever even existed.[111] Many ancient authors wrote about him, and most of the personal information about Hippocrates comes from them.[112]

Most historians agree that Hippocrates was born on the island of Kos c. 460 BCE, where he probably began practicing medicine in an asclepeion.[113] Hippocrates was associated with Asclepius on his father's side and Hercules on his mother's side.[114] Even though he spent most of his life in Athens, he travelled all over Greece practicing medicine. We are less certain about when and where he died, although most ancient authors believe that he had lived to a ripe old age and died around 370 BCE in Larissa (Thessaly).[115]

Scarce biographical facts about Hippocrates' life, no matter how uncertain they may be, cannot diminish his importance for the development of Western medicine. Hippocrates established medicine as a discipline separate from other fields thus shaping science all the way to the Renaissance. His humoral theory dominated medicine, philosophy and even art through Antiquity and the Middle Ages.

HIPPOCRATIC CORPUS

The Hippocratic Corpus (*Corpus Hippocraticum*) is a collection of about 60 medical manuscripts whose authorship has been attributed to Hippocrates since antiquity.[116] The manuscripts represent a series of lectures, research, notes in the form of

111 Nutton (2004: 103); Manger (2005: 93)
112 Soranus. Gynecology; Garrison (1966: 92–93)
Kao jednog od prvih Hipokratovih biografa treba istaknuti poznatog antičkog ginekologa Sorana iz Efeza koji nam donosi najviše detalja o njegovom životu.
~ One of the first to write about Hippocrates was the famous ancient gynecologists Soran of Ephesus, who brings us many details about Hippocrates' life.
113 Nuland (1988: 4)
114 Jouanna (2001: 37)
115 Margotta (1968: 62)

HIPOKRATOV KORPUS

Hipokratov korpus (lat. *Corpus Hippocraticum*) zbirka je od ukupno 60–ak rukopisa čije se autorstvo od antike pripisivalo Hipokratu.[116] Sadržajno, rukopisi predstavljaju niz predavanja, istraživanja, uputa u obliku udžbenika, bilježaka, rasprava i filozofskih eseja iz različitih područja medicine.[117] Iako spisi slijede glavne postavke Hipokratovog nauka, tematski se vrlo razlikuju, do te mjere da određene rasprave zastupaju potpuno suprotna mišljenja. Stil pisanja razlikuje se od djela do djela te su namijenjena različitoj publici, kako liječnicima i onima koji proučavaju medicinu, tako i laicima.

Vrijeme nastanka spisa koja sačinjavaju Korpus predmet je diskusije među stručnjacima. Lingvističkim analizama utvrđeno je da je većina rasprava nastala u periodu između 420. i 350. g. pr. Kr., dio je nastao u 3. i 2. st. pr. Kr., dok se najmlađe datiraju na početak nove ere, tj. u 1. i 2. st. poslije Krista.[118] S obzirom na datacije, sam Hipokrat ne može biti autor svih djela koja čine Korpus, već se smatra da su ona rezultat rada njegovih sljedbenika.[119]

Gdje je kao zbirka oformljen Hipokratov korpus također je nepoznato.[120] Kao najvjerojatnije mjesto ističe se Aleksandrija u 3. st. pr. Kr. i njezina slavna Ptolomejeva knjižnica.[121]

Rasprave pokrivaju širok raspon tema vezanih uz prakticiranje medicine, opise bolesti, medicinske slučajeve, teorije nastanka bolesti i metodologije liječenja, ali i status medicine u društvu te teme vezane uz ponašanje liječnika i njihovu etiku, a među njih pripada i Hipokratova zakletva. Među najpoznatije rasprave Korpusa pripadaju *O staroj medicini* (grč. Περὶ Ἀρχαίας Ἰατρικῆς), *Epidemije I, II* i *III* (lat. De morbis popularibus), *O mjestima u čovjeku* (lat. De locis in homine), *Frakture* (lat. De fracturis), *O ozljedama glave* (lat. De capitis vulneribus), *Bolesti* (lat. De morbis) i *O ženskim bolestima* (lat. De mulierum affectibus).[122]

Vjerojatno najpoznatiji medicinski tekst svih vremena, Hipokratova zakletva, zapravo predstavlja vrstu ugovora između naučnika, budućeg liječnika, i njegovog učitelja te određuje njegovo profesionalno ponašanje i ophođenje prema pacijentima. Pripada skupini tekstova Korpusa koje se bave etičkim pitanjima i položajem liječnika u društvu. Smatra se da je nastala između kraja 5. i 3. st. pr. Kr. Nije sigurno kad je postala obaveznim dijelom obrazovanja budućih antičkih liječnika, ali o njezinom prestižu već u antici govore česti prikazi na grobnim spomenicima liječnika te je moguće da se od 4. st. polaže i kao zakletva.[123]

Za razliku od ostalih djela Hipokratovog korpusa sama zakletva je religijski obojena.[124] Tekst Zakletve počinje sa zazivom božanstava, poimence Apolona Iatrosa, Asklepija te Higije i Panakeje da budu svjedoci časnih namjera liječnika–naučnika.[125] Tematski, zakletva se sastoji od dva dijela. Prvi popisuje obveze između naučnika, s jedne strane, i njegovog učitelja i obitelji

Sl. 17. Posuda s poklopcem, piksida, u kojoj su se mogli čuvati farmaceutski ili kozmetički pripravci. (južna Italija, 4. – 3. st. pr. Kr., K36)
~ Fig. 17 Vessel with a lid, a pyxis, that might have been used for storing remedies or for cosmetics. (South Italy, 4th – 3rd century BCE, K36)

textbooks, treatises, discussions and philosophical essays on various fields of medicine.[117] Although they follow the main principles of Hippocrates' teaching, their themes are very different, so certain texts represent completely opposite opinions. The writing style differs from work to work, and they were intended for different audiences, from physicians and those who study medicine, to common people.

Experts disagree on the exact time the manuscripts in the Corpus were written. Linguistic analysis confirms that most manuscripts were written in the period between 420 and 350 BCE. One part originated in the 3rd and 2nd century BCE while the youngest date back to the 1st and 2nd century CE.[118] Hippocrates cannot be the author of all the works in the Corpus, so it is widely accepted that they are the product of his followers.[119]

We also do not know how the Corpus was made.[120] The most likely location is Alexandria in the 3rd century BCE with its famous Ptolemaic library.[121]

The manuscripts cover a wide range of topics related to the practice of medicine. They include descriptions of illnesses, case histories, theoretical and methodological reflections, status of medicine in society, and medical ethics and manners, among them the famous Hippocratic Oath. Some of the most famous debates in the Corpus are *On Ancient Medicine* (Περὶ Ἀρχαίας Ἰατρικῆς) *Epidemics I, II* and *III* (*De morbis popularibus*), *On Places in Man* (*De locis in homine*), *Fractures* (*De fracturis*), *Head injuries* (*De capitis vulneribus*), *Diseases* (De morbis) and *On Women's Diseases* (*De mulierum affectibus*).[122]

116 Nutton (2004: 60)
117 Ashworth, Singer (1962: 23)
118 Nutton (2004: 60–61)
119 Stručnjaci smatraju da se među raspravama može prepoznati jedinstveni stil barem devetnaest različitih autora.
~ Experts believe that unique styles of at least nineteen different author can be identified. Tuke (1911: 518)
120 Margotta (1968: 64)
121 Nutton (2004: 61)
122 Slobodan prijevod autora.
~ Author's free translation.
123 Jouanna (2001: 45)
124 Temkin (1991)
125 Temkin, Temkin (1967: 63)

Sl. 18. Brončani novac cara Komoda s njegovim prikazom na aversu. Na reversu Asklepije drži čvorasti štap obavijen zmijom, dok goli Apolon u rukama drži lovorovu grančicu i dvostranu sjekiru. (Lidija, c. 191. – 192. g., K15)
~ Fig. 18 Bronze coin of emperor Commodus with his portrait on the obverse. On the reverse, Asclepius is holding a snake–entwined knotted staff, and a naked Apollo is holding a laurel branch and a double–axe. (Lydia, c. 191 – 192 CE, K15)

s druge strane, te obavezu naučnika da preda svoje znanje drugima. Postajući naučnikom liječnika, pojedinac zapravo postaje posvojenim članom liječničke obitelji te je dužan tretirati ostale članove kao svoju braću. Drugi dio Zakletve predstavlja sažeti pregled profesionalne liječničke etike tadašnjeg vremena.[126] Naglašava se savjesnost liječnika, potreba da se pacijentova dobrobit stavi na prvo mjesto te diskrecija. Mnogi autori slažu se da dva djela Zakletve nisu čvrsto povezana te da ih je moguće tretirati kao dvije zasebne cjeline.[127]

Iako je vrijednost Zakletve za povijest medicine neupitna, treba naglasiti da je ona kao dokument itekako produkt vlastitog vremena, ali da i kao takva ne predstavlja univerzalne vrijednosti grčkog društva klasične epohe.[128] Određene postavke koje zastupa Zakletva, posebice u svojem drugom djelu, zapravo ne odražavaju prevladavajući stav u društvu, već otkrivaju vrijednosti uskog djela ljudi u čijem je krugu vjerojatno sastavljena jer propagira stavove Pitagorejaca.[129] Hipokratovoj zakletvi često se pridodaje bezvremenska i univerzalna vrijednost, a Ženevska liječnička zakletva, kao moderna liječnička zakletva, imala je za svrhu preurediti Hipokratovu zakletvu na način da se prilagodi modernom svijetu uz naglašavanje humanosti kao glavnog pokretača suvremenih liječnika, a i ona je od svog nastanka nadopunjavana nekoliko puta.[130]

Probably the best known medical text of all time, the Hippocratic Oath, actually represents a kind of contract between the apprentice, the future physician, and his teacher, and determines the professional conduct and treatment of patients. It belongs to a group of texts in the Corpus that deal with ethical issues and the position of physicians in the community. It was probably composed between the 5th and 3rd century BCE. It is not certain when it became a part of mandatory education, but it is possible that it was taken as a pledge from the 4th century. It was often displayed on graves of physicians which proves its prestige during antiquity.[123]

Unlike all the other works in the Corpus, the Hippocratic Oath has religious connotations.[124] The Oath begins with the invocation of deities, namely Apollo Iatros, Asclepius, Hygieia and Panacea, to witness the honourable intentions of physician–apprentices.[125] The Oath consists of two parts. The first lists the obligations of the future physician on the one hand, and his teacher and the teacher's family on the other, as well as the obligation of the future physician to share his knowledge with others. The future physician actually becomes an adopted member of the teacher's family and should treat the other members as his brothers. The second part is a brief overview of the professional medical ethics of the time.[126] It stresses the importance of the physician's conscience, the need to put the patient's well–being first, and discretion. Many authors agree that the two parts of the Oath do not have strong connections and can be treated as two separate texts.[127]

Although the value of the Oath as a part of the history of medicine is unquestionable, it should be noted that, as a document, it is very much a product of its time. It does not represent the universal values of Greek society in the classical period.[128] Certain ideas discussed in the Oath, especially in its second part, do not reflect the prevailing attitudes in society. Instead, they reveal the values of a small group of people who composed it, because the Oath actually propagated Pythagorean views.[129]

Timeless and universal values are often associated with the Hippocratic Oath, and the Declaration of Geneva, a modern physician's oath, adapted the Oath while emphasizing humanity as the main drive of modern physicians. From its creation, the Declaration of Geneva has been amended several times.[130]

HUMORISM

Hippocrates is certainly not the original author of humorism, but the theory of bodily fluids constitutes the basis of his medical learning and is inextricably linked to the practical part of his medicine. Some historians mention Polibus, Hippocrates' son–in–law, as the possible author of the theory.[131] The origins of humorism can be traced back to Mesopotamian and Egyptian physicians. In ancient Greece, it was first adopted by philosophers.[132] Empedocles (c. 490–430 BCE), a famous philosopher from Sicily, thought that the whole world was made up of only four elements – water, air, fire and earth. Any changes happening in nature and the human body are the result of changes in the ratio of the four elements.[133] It was a small leap to go from the theory of four elements to the theory of the four bodily fluids.

According to Hippocratic humorism, there are four bodily fluids, or humours. They occur in certain organs and are not only responsible for the health of a person, but also for character. Blood (Αίμή) is produced in the liver and is moist and warm. Yellow bile (Χολή) is produced in the spleen and is, in contrast with blood, warm and dry. Black bile (Μέλαινα Χολή) occurs in the bile bag and is dry and cold.[134] The last fluid, mucus/phlegm (Φλέγμα) is located in the brain and lungs, and has wet and cold properties.

A body is healthy when all four fluids are in balance. Such a state of balance or harmony was called *eukrasia* (εὐκρασία). No bodily fluid is hazardous to health, but any imbalance causes disease, physical defects and disorders, a condition called *dyskrasia*

126 Ibid.
127 Manger (2005: 96)
128 Temkin, Temkin (1967: 63)
129 Temkin, Temkin (1967: 63); Manger (2005: 97)
130 World Medical Association International Code of Medical Ethics. (14. 07. 2016.)

TEORIJA ČETIRI TJELESNE TEKUĆINE

Iako Hipokrat zasigurno nije originalni tvorac humoralizma, teorije o tjelesnim tekućinama, ona čini okosnicu njegovog medicinskog učenja i neraskidivo je vezana za praktični dio bavljenja medicinom. Čak i određena djela Hipokratovog korpusa kao tvorca humoralizma spominju Poliba, Hipokratovog zeta.[131] Začetke humoralne teorije može se pratiti sve od mezopotamskih i egipatskih liječnika, dok je kod Grka prvo preuzimaju filozofi.[132] Empedoklo (oko 490. g. pr. Kr. – 430. g. pr. Kr.), poznati filozof sa Sicilije, smatrao je da je cijeli svijet izgrađen od samo četiri elementa — vode, zraka, vatre i zemlje. Sve promjene koje se događaju oko nas, ali i u ljudskom tijelu samo su promjene u međusobnim omjerima tih četiriju elementa.[133] Korak od teorije četiri elementa prema četirima tjelesnim tekućinama čini se i više nego logičan slijed.

Prema Hipokratovoj teoriji humoralizma u tijelu pojedinca postoje četiri tjelesne tekućine, koje nastaju u određenim organima, te su odgovorne ne samo za zdravstveno stanje pojedinca, nego i za osobine njegovog karaktera. Krv (grč. αίμη) nastaje u jetri, ima vlažna i topla obilježja. Žuta žuč (grč. Χολή) nastaje u slezeni te je za razliku od krvi topla i suha. Crna žuč (grč. μέλαινα Χολή) nastaje u žučnoj vrećici te je suha i hladna. Zadnja tekućina, sluz/flegma (grč. Φλέγμα) nalazi se u mozgu i plućima te ima vlažna i hladna svojstva.[134]

Tijelo je zdravo kada se sve četiri tekućine nalaze u međusobnoj ravnotežu. Takvo stanje ravnoteže ili harmonije naziva se *eukrasia* (grč. εὐκρασία). Sama po sebi ni jedna tjelesna tekućina nije opasna po zdravlje, ali neravnoteža svake od navedenih uzrokuje bolesti, tjelesne nedostatke i poremećaje, stanje koje se naziva *diskrasia* (grč. δυσκρασία). Iako se ovakvo objašnjenje iz današnje perspektive može činiti naivno, treba imati na umu da ono objašnjava fiziološke uzroke bolesti u skladu s tadašnjom razinom znanja. Ono što se nikako ne može poreći, izostanak je bilo kakve nadnaravne sastavnice u takvom objašnjenju. Hipokrat izričito odbacuje bilo kakvu božansku intervenciju kao uzrok bolesti te naglašava njezin prirodan karakter.

Ono što je ključno za Hipokratov humorizam, pretpostavka je da ne postoji univerzalno stanje ravnoteže za sve ljude, već je ono vrlo individualno.

Prema Hipokratu, osim tjelesnih predispozicija pojedinca, na pojavu i razvoj bolesti utječu i razni vanjski faktori. Sve što pojedinac unosi u organizam putem hrane i pića utječe na sastav tjelesnih tekućina, jednako kao i razni klimatski faktori, poput godišnjeg doba, vremena, vjetrova, ali i mjesto gdje oboljeli živi.[135]

Hipokratov humoralizam obilježio je cijelu antičku medicinu. Posebno ga je prigrlio Galen, preko čije ostavštine je postao dominantan sustav srednjevjekovne medicine. Preko Galenovih su ga djela prigrlili i islamski liječnici. Iz europske znanosti nestao je tek s 19. stoljećem te stoga možemo reći da je vladao zapadnom medicinom više od dvije tisuće godina.[136]

Sl. 19. Gema s prikazom Eskulapa i Salus koji stoje nasuprot jedno drugom. Eskulap između njih drži štap oko kojeg je omotana zmija. (Kostolac, 1. – 4. st., K9)
~ Fig. 19 Gem depicting Asclepius and Salus standing on opposite sides. Asclepius is holding a snake-entwined staff between them. (Kostolac, 1st – 4th c., K9)

(δυσκρασία). Although this explanation may seem naive from today's perspective, we should keep in mind that it explained the physiological causes of disease in accordance with the level of knowledge during antiquity. What cannot be denied is the absence of any supernatural component in the explanation. Hippocrates expressly rejected any divine intervention as the cause of illness and emphasized its natural character.

What was crucial in Hippocrates' humorism was the assumption that there was no universal state of balance for everybody.

According to Hippocrates, various external factors and bodily predispositions of the individual affected the emergence and development of different illnesses. Everything people put into their bodies through food and drink, affects the balance of humours. Various climatic factors, such as seasons, weather, winds, and the place where the patient lives were also important.[135]

Hippocrates' humorism defined ancient medicine. In particular, it was embraced by Galen and through his legacy became the dominant system in medieval medicine. Through Galen's writing, it was accepted by Islamic physicians. It disappeared from European science only in the 19th century so we can say that it ruled Western medicine for over two thousand years.[136]

HIPPOCRATIC MEDICINE

Hippocrates' practical approach to treatment revolutionized healing to the same extent that it affected the theoretical approach to disease. His work is seen as the culmination of the development of medicine during the Classical period in ancient Greece.

At the heart of the Hippocratic approach to treatment was medical prognosis (Πρόγνωσυς). Prognosis did not only allow a physician to foresee the course of the disease. A good prognosis took into account that the body of every patient is different, and ensured that patients received the best possible treatment. By establishing a proper prognosis, the physician did not only gain the patient's trust but it also gave him a kind of control over the disease, allowing him to change the type of treatment as the disease progressed. The prognosis monitored the disease, followed its course, but also allowed certain changes when necessary.[137]

131 Hippokrates. On the Nature of man; Nutton (2004: 74)
132 Manger (2005: 42)
133 Russel (1995: 62); Trepanier (2004)
134 Byron (1994: 103–105)
135 Hippocrates. Regimen. 2.6.470L; Nutton (2004: 75)
136 Arikha (2007: 38)

HIPOKRATOVA MEDICINA

Hipokratov praktični pristup liječenju revolucionirao je tadašnji način liječenja u istoj mjeri u kojoj je utjecao na teorijski pristup bolestima. Na period njegova rada gleda se kao na vrhunac antičke medicine klasičnog razdoblja stare Grčke.

U samom središtu Hipokratovog pristupa liječenju nalazi se medicinska prognoza (grč. πρόγνωσυς). Na temelju prognoze liječnik nije samo predviđao tijek bolesti. Kvalitetna je prognoza uzimala u obzir individualni tjelesni ustroj oboljelog te je osiguravala da oboljeli dobije najbolji mogući tretman prilagođen upravo njemu. Dajući odgovarajuću prognozu, liječnik nije samo zadobio pacijentovo povjerenje, već mu je prognoza davala određenu kontrolu nad bolešću dozvoljavajući da mijenja način liječenja sukladno napretku bolesti. Prognoza prati bolest, slijedi njene uobičajene tokove, ali dopušta i određene promjene od ustaljenog slijeda.[137]

Da bi liječnik postavio kvalitetnu prognozu stanja pacijenta, ključno je bilo prikupljanje pravih podataka i detaljno praćenje svih simptoma vezanih za bolest. Oboje je moralo biti obavljeno na stručan, temeljit i objektivan način.[138] U središtu takvog pristupa nalazio se pojedinac, oboljeli, a ne bolest kao takva.[139] Upravo je Hipokrat naglasio važnost pojedinačnog pristupa svakom pacijentu. Kako bi osigurao sve relevantne podatke, liječnik se mora zanimati ne samo za trenutno stanje svog pacijenta, već i za njegova prošla stanja i oboljenja te uzeti u obzir njegove želje u budućnosti.[140] Za kvalitetnu prognozu jednako je važno ono što je utjecalo na bolest prije njezinog izbijanja, kao i predviđanje kako pacijentove radnje mogu promijeniti tijek bolesti.[141] Isticanjem važnosti individualnog pristupa Hipokrat je u medicinu uveo pojam povijesti bolesti, *anamneze* (grč. Ἀνάμνησις, prisjećanje), jednog od najvažnijih alata modernih liječnika i holističkog pristupa liječenju. Stavljanje prognoze u samu srž liječenja vrhunac je medicinskog promišljanja klasičnog razdoblja i ostaje polazišna točka kroz cijelo 5. i 4. st. pr. Kr.[142]

Usko vezan uz postavljanje prognoze, važan je pojam u Hipokratovoj medicini *kriza* (grč. κρίσις), ključni trenutak u kojem će u tijelu oboljelog prevladati bolesti ili će ono početi proces oporavka.

Nakon postavljanja zadovoljavajuće prognoze liječnik odabire odgovarajući tretman koji uvijek mora biti u skladu s prirodom. Hipokratov pristup liječenju nadasve je neinvazivan i naglašava sposobnost tijela oboljelog da se samo bori protiv bolesti. Tijelo, naime, samo posjeduje načine da povrati izgubljenu ili poljuljanu ravnotežu, a liječnik je tu da pokaže pravi put.[144]

Hipokrat ističe kako su odmor i mirovanje te pravilna prehrana u skladu s bolesti ključni za oporavak pacijenta.[145] Ovi su postupci zapravo prva crta obrane protiv bolesti koju koristi liječnik koji slijedi Hipokratov pristup, tek kada oni ne daju zadovoljavajuće rezultate, liječnik pribjegava agresivnijim metodama.

Sl. 20. Trbušasti vrč s plitkim kanelurama, ispod drške ima urezan znak ⁕. (južna Italija, 4. – 3. st. pr. Kr., K37)
~ Fig. 20 Round jug with shallow flutes and an incised mark under the handle (⁕). (South Italy, 4th – 3rd century BCE K 37)

In establishing a good prognosis, it was crucial to collect real data and carefully monitor all the symptoms related to the disease. Both had to be carried out in a professional, thorough and objective manner.[138] His approach was focused on the patient and not the disease.[139] Hippocrates stressed the importance of an individual approach to every patient. To ensure that he had gathered all the relevant information, a physician should be interested not only in the patient's current condition, but also in his past conditions and illnesses, and consider his wishes for the future.[140] For a good prognosis, it is equally important what affected the disease before its outbreak, as well as to predict how a patient's actions can change the course of the disease.[141] By stressing the importance of the individual approach to treatment, Hippocrates introduced the concept of medical history, *anamnesis* (Ἀνάμνησις, to recall), one of the most important tools of modern medicine and the holistic approach to treatment. Stressing prognosis as a vital part of treatment was the crucial achievement of medical thinking in the Classical period, and it remained equally important throughout the 5th and 4th century BCE.[142]

Another important concept in the Hippocratic medicine, closely related to prognosis, was *crisis* (κρίσις). Crisis represented a critical moment in which a patient's body would become overcome with the disease or begin to recover.

After establishing a satisfactory prognosis, a physician selects an appropriate treatment which should always be in harmony with nature. Hippocrates' approach to treatment was non–invasive and, above all, emphasized the patient's natural ability to fight the disease.[143] The body had its own ways to recover a lost or shaky balance, and a physician was there to show the right path.[144]

Hippocrates stressed that rest and proper diet in accordance with a particular disease

137 Temkin, Temkin (1967: 69)
138 Margotta (1968: 66)
139 Manger (2005: 95)
140 Nutton (2004: 98)
141 Temkin, Temkin (1967: 69)
142 Vegetti (1996: 65–81); Nutton (2004: 88)
143 Manger (2005: 99)
144 Garrison (1966: 99)
145 Treba spomenuti da važnost pravilne prehrane te redovite tjelovježbe nisu prvi uočili grčki liječnici, već su ih naglašavali mezopotamski i egipatski liječnici nekoliko stoljeća ranije. Diietetika igra jednu od ključnih uloga u Hipokratovoj terapiji te je gotovo nemoguće preuveličati njezinu ulogu u antičkoj medicini.
~ The importance of a proper nutrition and regular exercise was first emphasized by Mesopotamian and Egyptian physicians a few centuries earlier. Dietetics played a key role in the Hippocratic therapy and it is almost impossible to exaggerate its role in ancient medicine.
Hippocrates. Ancient Medicine. 3.4–6.I, 576–580L; Temkin, Temkin (1967: 303–317); Craik (1995: 343–350)

Sl. 21. Srebrni novac cara Domicijana s njegovim prikazom na aversu. Salus, koja oslonjena na stup hrani zmiju iz patere, prikazana je na reversu. (nepoznato nalazište, 80. g., K13)
~ Fig. 21 Silver coin of emperor Domitianus with his bust on the obverse. Salus, leaning on a pillar and feeding a snake from a patera, is depicted on the reverse. (unknown site, 80 CE, K13)

Sljedeći na red dolaze razni ljekoviti pripravci, poput napitaka i obloga. Njihova je uloga da povrate tijelo u stanje ravnoteže te se, u skladu s humoralnom teorijom, biraju oni lijekovi koji izazivaju suprotno stanje od onoga u kojem se bolesno tijelo nalazi.

Kada ni upotreba farmakopeje nema pozitivan učinak na zdravlje pacijenta, liječnik mora pribjeći invanzivnim metodama borbe protiv bolesti. To uključuje operativne zahvate. Hipokrat savjetuje krajnji oprez pri donošenju takve odluke te upućuje liječnike da na prvom mjestu moraju staviti dobrobit pacijenta, a ne vlastitu slavu. Iz dijela Hipokratovog korpusa moguće je iščitati da su liječnici često puštali krv pacijentima, ispirali otvorene rane te ih spaljivali, ali i da su izvodili i komplicirane kirurške zahvate kada je to bilo potrebno.[146]

Naglasak na davanju prognoze, detaljnom promatranju pacijenta i njegove okoline, prikupljanju anamneze, inzistiranju na neinvazivnim metodama liječenja te prakticiranje općenite terapije karakteristike su koje zagovara Hipokratova škola medicine.[147] Njihovo inzistiranje na predviđanju, opservaciji i dokumentiranju slučaja revolucionirali su medicinu te joj dali čvrste racionalne temelje na njenom putu prema pravoj znanstvenoj disciplini.[148]

HIPOKRATOVO IME

Hipokratovo je ime nerazdvojivo od istoimene zakletve i cijelog korpusa djela koja mu se pripisuju. Hipokrat je također prvi identificirao određena medicinska stanja i simptome.[149] Sve do danas se u liječničkoj praksi upotrebljavaju nazivi: f*acies hippocratica* (bljedilo umirućeg), *succussio hipocratica* (zapljuskivanje tekućine kod hidropneumotoraksa) i *digiti hippocratici* (batičasti prsti kod bronhiektazije).[150]

were crucial for the patient's recovery.[145] These procedures were actually the first line of defence against the disease used by physicians who followed the Hippocratic approach. Only when they did not bring satisfactory results, physicians would resort to more drastic methods.

Next, we have various medicinal remedies, such as tonics and compresses. Their role was to restore the body's balance. In accordance with the humoral theory, physicians chose remedies that caused the opposite state than the state of a sick body.

When even medicine had no positive effect on the patient's health, physicians resorted to invasive methods for combating the disease. This meant surgery. Hippocrates advised extreme caution when making such decisions and insisted that physicians must put the well–being of the patient before their own glory. Several procedures are mentioned in the Corpus quite frequently, for example bloodletting, washing open wounds, and cauterization. They also performed complicated surgical procedures when necessary.[146]

Stressing the prognosis, detailed observation of patients and their environment, medical history, non–invasive methods of treatment, and general approach to therapy, were characteristics advocated by the Hippocratic school of medicine.[147] Their insistence on prediction, observation and documentation of cases, revolutionized early medicine and gave it a solid rational framework on its way to becoming a real scientific discipline.[148]

HIPPOCRATES' NAME

Hippocrates' name is inseparable from the Oath and the entire corpus of works attributed to him. Hippocrates was also the first to identify specific medical conditions and symptoms.[149] In modern clinical practice, we still use his name in connection with several conditions: *facies hippocratica* (pallor of the dying), *succussio hipocratica* (suppuration of the lining of the chest cavity), and *digiti hippocratici* (clubbing of fingers in the cases with bronchiectasis).[150]

146 Hippocrates. Head Wounds. 2, 5–7, 5: III, 190–210 L

147 Hipokratovu školu medicine nazivamo još i koanskom školom medicine, prema otoku Kosu. Razlikujemo je od knidske medicinske škole koja je stavljala naglasak na pravilno dijagnosticiranje bolesti.
~ The Hippocratic school of medicine was also called the Koan school of medicine, after the island of Kos. We distinguish it from the Cnydian medical school that emphasized the proper diagnosis of the disease.
Adams (1891: 15)

148 Nuland (1988: 5)

149 Chadwick, Mann (prev.) (1978: 170–171)

150 Klarić et al. (2007: 128)

HELENISTIČKA MEDICINA
~
HELLENISTIC MEDICINE

Ponekad se stječe dojam da između Hipokrata i Galena antička medicina stagnira ili, još gore, nazaduje. Sigurno je jedan od razloga za takvu predodžbu i nedostatak sačuvanih medicinskih tekstova iz tog razdoblja jer većina podataka dolazi do nas iz druge ruke ili u fragmentarnom obliku.[151]

Medicina helenističkog razdoblja imala je i svoj razvoj i svoje značajne predstavnike. Kao presudnu karakteristiku grčke helenističke medicine treba spomenuti pojavu ili daljnje profiliranje različitih pravaca tj. škola na koje utječe helenistička filozofija.[152] Dogmatici, empiristi, pneumatici i metodisti samo su neki od pravaca koji se javljaju. Uz daljnji uspon dijetetike, koja postaje gotovo zasebna grana medicine, ono što karakterizira helenističko razdoblje uspon je farmakologije.[153] Uspon farmakologije usko je vezan uz osvajanja Aleksandra Velikog koja su grčke liječnike izložila mnogim do tada nepoznatim biljkama i lijekovima.[154]

Još se jedno polje medicine razvija tijekom helenizma, osobito zahvaljujući radu aleksandrijskih anatomista, a to je kirurgija. Javljaju se novi zahvati i novi medicinski instrumenti potrebni za rad.[155]

Iz prijašnjeg je razdoblja naslijeđeno idealiziranje Hipokrata i njegovog rada. Medicina spomenutog razdoblja baštini mnoge značajke Hipokratovog nauka. Teorija tjelesnih tekućina, uz manje preinake i odstupanja, ostaje dominantan medicinski sistem. Ono što se nikako ne dovodi u pitanje, prirodni je uzrok bolesti, uplitanje božanstava u zdravlje i bolest čovjeka odlučno je ostavljeno po strani.

Zajednička je karakteristika svih medicinskih pravaca koji se pojavljuju u spomenutom vremenu, neodvojivost medicinske i filozofske misli te one zajedno dijele cijeli niz zajedničkih teorija i postavki.

Kao još jedan važan događaj istog perioda spominje se i dolazak grčke medicine u Rim i njezino potiskivanje tradicionalnog pastoralnog pristupa liječenju kod Rimljana.

Sl.22. Raznovrsni stakleni balzamariji koji su mogli biti korišteni za pripremu i čuvanje ljekovitih pripravaka. (Sisak, Bakar, Topusko, 1. – 4. st., K42 – 53)
~ Fig. 22 Various glass unguentaria that might have been used preparing and storing remedies. (Sisak, Bakar, Topusko, 1st – 4th c., K42 – 53)

Sometimes we can get the impression that ancient medicine stagnated, or even regressed, between the time of Hippocrates and Galen. One of the reasons is certainly a lack of surviving medical texts from this period since most of the data comes to us second-hand or in fragments.[151]

One of the most significant features of Hellenistic medicine was the emergence of various schools under the influence of Hellenistic philosophy.[152] Dogmatists, Empiricists, Pneumatics and Methodists were just some of them. With the rise of Dietetics, which almost became a separate branch of medicine, the most significant characteristic of the Hellenistic period was the rise of pharmacology.[153] The rise of pharmacology was closely linked to the conquest of Alexander the Great which exposed Greek physicians to many previously unknown plants and drugs.[154]

Another field of medicine that developed during the Hellenistic period, influenced by Alexandrian anatomists, was surgery. New procedures and medical tools necessary for surgeries were invented.[155]

Hippocrates and his work are still idolized, and medicine in the Hellenistic period inherited many features of the Hippocratic doctrine. The humoral theory remained the dominant medical practice, with minor modifications and variations. The natural cause of disease was in no way called into question, and meddling of deities in people's health was firmly put aside.

151 Nutton (2004: 135)
152 Manger (2005: 108)
153 Lloyd (1983: 119–126)
154 Garofalo (1988: fr. 35, fr. 270–284)
155 Drachmann (1963: 171–185)

PLATON I ARISTOTEL

Platon (grč. Πλάτων, 428./427. – 348./347. g. pr. Kr.) spominje Hipokrata u *Timeju* i *Fedoru*.[156] U velikoj mjeri koristio se medicinskim znanjem koje je uklopio u svoj filozofski sistem. Platonovo tijelo je građeno od četiri osnovna elementa (zrak, voda, zemlja i vatra) koja grade i sav ostali vidljivi svijet.

U *Timeju* spominje dva moguća uzroka bolesti kod ljudi, jedan proizlazi iz humoralne teorije te kao uzrok bolesti navodi neravnotežu i poremećaj u toku tjelesnih tekućina. Kao drugi uzrok spominje nemogućnost zraka da na pravilan način ulazi i izlazi iz tijela.[157] Platon slijedi svoju tripartitnu podjelu duše (na razum, duh i želje) i proširuje je na ljudsku anatomiju. Tako i tijelo ima tri lokusa ili centra, a razumni dio smješten je u mozgu. Duh je smješten u srcu, dok se centar ljudskih želja nalazi u donjem djelu torza, u želucu.[158] Njegovu su podjelu preuzeli mnogi antički filozofi i liječnici, između ostalog i Galen.

Smještajući tako dušu čovjeka u mozak, Platon prihvaća Hipokratovu tezu da i psihičke bolesti poput manije imaju tjelesni, tj. organski uzrok.[159] No kao uzrok nekih psihičkih bolesti Platon navodi i okolinu, tj. neodgovarajući odgoj, što je možda pravi početak vječne znanstvene debate o prevlasti genetskog nasljeđa ili okoline nad čovjekovim karakterom (*Nature vs. Nurture*).

Platonov je učenik Aristotel (grč. Ἀριστοτέλης, 384. – 322. g. pr. Kr.) pripadao asklepijadima i po očevoj i po majčinoj strani.[160] Njegova djela koja se prvenstveno bave medicinom, nisu nam sačuvana, tako da njegovo mišljenje o građi ljudskog tijela i bolesti moramo tražiti u drugim spisima. Bio je zainteresiran za biologiju i zoologiju, poznato je da je secirao životinje te je postavio prvu klasifikaciju preko 500–tinjak vrsta riba, ptica i sisavaca.[161] Njegova klasifikacija uključuje skalu živih bića (lat. *scala naturae*) na čijem dnu se nalaze biljke, a na vrhu čovjek, kao najsavršenije i najsloženije živo biće.[162] Slijedi Platona te također dijeli dušu na tri djela, vegetativni, senzorni i razum. Za razliku od svojih prethodnika, a u skladu s egipatskom tradicijom Aristotel smješta razum, tj. racionalnu dušu, u srce.[163] Prihvatio je teoriju o četiri elementa koja sačinjavaju sav živi svijet, te im je dodao još jedan, peti, eter, kao nebeski element koji nije podložan istim zakonima kao i ostala četiri.[164] Također je vjerovao da su žene anatomski manje savršene od muškaraca pa prema tome i inferiornije. Zaključio je to na temelju pretpostavke da žene imaju manje zubi i manje šavova na lubanji.[165]

Iako je Aristotel nedvojbeno donosio neke vrlo krive zaključke, njegovo je znanje biologije, a neposredno time i znanje o građi čovjeka, dio šireg filozofskog sistema koji počiva na točno određenim fizičkim zakonima. Upravo je tim sistemom Aristotel utjecao na razvoj zapadne znanosti više od bilo kojeg antičkog filozofa.

Sl. 23. Staklena posudica u obliku ptice (gutus). Ima trbušasto tijelo i uski izvučeni lijevak koji je služio za precizno izlijevanje tekućine. (Stenjevec, 1. – 2. st., K54)
~ Fig. 23 Glass vessel shaped like a bird (guttus) with a round body and protruding narrow spout used for the precise dosing of liquids. (Stenjevec, 1st – 2nd c., K54)

Sl. 24. Dva staklena tamnoplava balzamarija. Manji je izrađen od prozirnog, a veći od neprozirnog stakla. (Bakar, kraj 1. st. pr. Kr. – 1. st., K47 – 48)
~ Fig. 24 Two dark blue glass unguentaria, the smaller one is made of translucent glass, and the larger of opaque glass. (Bakar, end of 1st c. BCE – 1st c. CE, K47 – 48)

The one thing that all medical schools that appear in this period had in common was that they did not separate medicine and philosophical thought. Together, they share a full range of theories and postulates.

Another important event during this period is the arrival of Greek medicine in Rome and its suppression of the traditional Roman pastoral approach to healing.

PLATO AND ARISTOTLE

Plato (Πλάτων, 428/427–348/347 BCE) wrote about Hippocrates in two of his works, *Timaeus* and *Phaedrus*.[156] He used medical knowledge which he incorporated into his philosophy. Plato's body was built from four basic elements (air, water, earth and water) which built the entire visible world.

In *Timaeus*, Plato mentioned two possible causes of disease in humans. One was derived directly from the humoral theory and stated that an imbalance of bodily fluids was the cause of illness. The other cause mentioned was the inability of air to properly enter and exit the body.[157] Plato followed his tripartite division of the soul (reason, spirit and appetite) and applied it to human anatomy. The body also had three loci, or centres, and the most important part, reason, was situated in the brain. Spirit was located in the heart, while the centre of human desires and appetite was in the lower part of the torso, in the stomach.[158] This tripartite division was used by many ancient philosophers and physicians, including Galen.

By placing the soul inside the body, Plato accepted the Hippocratic theory that psychological disorders (for example mania) have a physical cause.[159] Plato also mentioned the environment and inadequate upbringing as the cause of some mental disorders. This could perhaps be the beginning of the timeless scientific debate about the predominance between genetic heritage and environment in the development of a person's character (*Nature vs. Nurture*).

Plato's student Aristotle (Ἀριστοτέλης, 384–322 BCE) belonged to Asclepiads on both his parents' side. His work that dealt primarily with medicine has been lost. His reflections on the structure of the human

156 Timej (grč. Τίμαιος, lat. Timaeus) jedan je od Platonovih dijaloga, pisan u obliku dugačkog monologa glavnog lika Timeja s Lokrija, napisan oko 360.g.pr.Kr. Između ostalog dijalog se bavi građom fizičkog svijeta.
Fedon (grč. Φαῖδρος, lat. Phaedrus), Platonov dijalog u kojem glavnu riječ imaju Sokrat i Fedron, nastao oko 370.g.pr.Kr.
~ Timaeus (Τίμαιος) is one of Plato's dialogues, written in the form of a long monologue of the main character Timaeus of Lokri, written c. 360 BCE. Among other things, the dialogue deals with the structure of the physical world.
Phaedrus (Φαῖδρος) is Plato's dialogue in which the main protagnists are Socrates and Phaedrus, written around 370 BCE.
Platon. Timej; Fedon.

157 Platon. Timej. 84a, 84D–E; Nutton (2004: 115)

158 Platon. Timej. 44D, 70; Dorter (2006: 360)
Posebice odgovornima smatra žuč i sluz čije pare mogu zahvatiti različite djelove duše.
~ He considers bile and mucus particularly responsible because their vapors can have an effect on different parts of the soul.

159 Williams (1973: 196–206)

160 Nutton (2004: 115)
Glavna su Aristotelova djela koja se bave različitim vrstama i njihovom klasifikacijom Povijest životinja (grč. Τῶν περὶ τὰ ζῷα ἱστοριῶν, lat. Historia Animalium) i O dijelovima životinja (grč. Περι ζωων Μοριων, lat. De Partibus Animalium).
~ Aristotle's main works that deal with different animal species and their classification are History of animals (Τῶν περὶ τὰ ζῷα ἱστοριῶν, Historia Animalium) and Parts of animals (Περι ζωων Μοριων, De Partibus Animalium)
Bergstrom, Dugatkin (2012: 35)

161 Mayr (1982: 201–202)

162 Mason (1962: 45)

163 Hahm (1982: 60–74)

164 Aristotle. On the Parts of Animals, 3; Lloyd (1983: 94–104); Dean–Jones (1994: 81)

ALEKSANDRIJSKA ANATOMSKA ŠKOLA

Od najranijih početaka liječnici su morali imati barem elementarno znanje o građi ljudskoga tijela. Homer u *Ilijadi* donosi vrlo detaljne opise ozljeda te njihove nazive što dokazuje da je u velikoj mjeri bio upoznat s ljudskom anatomijom.[166] Za vrijeme Hipokrata i njegovih sljedbenika anatomija se nije podučavala kao zasebni dio medicine, iako djela koja čine Hipokratov korpus sadržavaju bogato znanje o funkcioniranju tijela i njegovim organima. Općenito govoreći, antička medicina nije smatrala da je znanje anatomije presudno za liječnički poziv. Sustavno seciranje ljudskog tijela ne samo da nije bilo poticano, već je dugo bilo i nezamislivo, najvećim djelom zbog grčkog zakona (i tabua) koji je branio doticanje mrtvog tijela.[167] Ali ono što je bilo nezamislivo starim Grcima, bilo je dio duge tradicije Egipćana. Upravo će u Aleksandriji doći do spajanja grčke medicine i egipatskog poznavanja anatomije.

U prvoj polovici 3. st. pr. Kr. u Aleksandriji djeluje medicinska škola koja potiče seciranje pokojnika, upravo u svrhu unapređivanja znanja o anatomiji. Stoljetna praksa mumificiranja Egipćanima je omogućila detaljno poznavanje unutarnjeg ustroja ljudskog tijela. Stoga, iako su medicinska praksa i praksa mumificiranja u starom Egiptu bile strogo odvojene, do određene je razmjene znanja moralo doći. Važan korak bilo je osnivanje Aleksandrijske knjižnice i muzeja od strane Ptolomeja I oko 300. g. pr. Kr., dviju važnih institucija koje su poticale istraživanje i sakupljanje znanja.[168]

Centralne figure aleksandrijske anatomske škole bila su dva liječnika–anatoma, Herofil i Erasistrat. Bili su gotovo suvremenici te su djelovali u prvoj polovini 3. st. pr. Kr. Sva su njihova djela, nažalost, izgubljena pa o njima saznajemo iz sekundarnih izvora.[169]

Herofila (grč. Ἡρόφιλος, c. 335. – 280. g. pr. Kr.) se naziva ocem anatomije. Rođen je u Kalcedonu (današnja Turska), a većinu je života proveo u Aleksandriji. Smatra se da je bio Praksagorin učenik te da se preko njega upoznao s Hipokratovim učenjem. Iako je prihvatio humoralnu teoriju uzroka bolesti te ju je donekle prilagodio (u njegovom učenju veliku ulogu igra pneuma, zrak), odvaja se od Hipokratove prognoze i stavlja naglasak na istraživanje i eksperimentiranje.[170]

Herofil je prvi započeo sa sustavnim provođenjem sekcije ljudskog tijela u svrhu stjecanja znanja o građi i funkciji unutarnjih organa.[171] Zanimala ga je građa ljudskog tijela u cjelini te je prvi imenovao mnoge dijelove unutarnjih organa, posebice mozga, za kojeg smatra je da je centar svjesnosti i intelekta.[172] Uz mozak, fokus je njegova istraživanja bio kardiovaskularni sustav. Prvi je ustanovio razliku između vena i arterija te je odbacio ranije učenje da arterije ne prenose krv, već samo zrak, a prvi je objasnio i funkciju srčanog pulsa te ga je koristio u postavljanju dijagnoze.[173] Pionirski je i njegov rad na živčanom sustavu te podjela živaca na senzorne i motoričke.

body and disease are known through other authors. He was deeply interested in biology and zoology, dissected animals and set up the first classification of more than 500 species of fish, birds and mammals.[161] His classification included a scale of living beings (*Scala naturae*). At the bottom of the scale were plants, and man was on the top as the most perfect and complex being.[162] As Plato, he divided the soul into three parts, vegetative, sensory and rational. Unlike his predecessors, and in accordance with Egyptian tradition, Aristotle placed the rational part of the soul in the heart, not the brain.[163] He accepted the theory of the four elements that make up all living creatures, and added a fifth element known as ether. Ether was a heavenly element that was not subjected to the same laws of nature as the other four.[164]

He also believed that women were anatomically less perfect than men, and were therefore inferior. He based his conclusions on the assumption that women had fewer teeth and fewer sutures in the skull.[165]

Although many of his conclusions were undoubtedly wrong, his knowledge of biology and human anatomy was a part of a broader philosophical system, a system based on specific physical laws. This system has had an influence on the development of Western science more than any other.

ALEXANDRIAN SCHOOL OF ANATOMY

Physicians have always had at least some basic knowledge of anatomy. In *Iliad*, we have detailed descriptions and names of injuries which prove that Homer was very much aware of how a human body functions.[166] During the time of Hippocrates and his followers, anatomy was not taught

Sl. 25. Različito oblikovani željezni noževi na drškama su imali obloge od organskog materijala, npr. kosti ili drveta, koje se nisu sačuvale. (Sisak, 1. – 4. st., K72 – 75)
~ Fig. 25 Various iron knives with handles made of organic material which is not preserved (bone or wood). (Sisak, 1st – 4th c., K72 – 75)

166 Temkin, Temkin (1967: 248)
167 Parker (1983: 33–41)
168 Manger (2005: 106)
169 Connell (2000: 405–27)
Uključujući radove o vrućici, puštanju krvi, paralizi, lijekovima, otrovima i diietetici.
~ Including written works on fever, blodletting, paralysis, drugs, poisons and dietetics
Manger (2005: 108)
170 Manger (2005: 106)
171 Temkin, Temkin (1967: 251)
172 Galen. Anatomical Procedures. 9 3: 2, 723; Singer (1956: 233)
173 Nutton (2004: 135)

Ono po čemu se Herofil razlikovao od ostalih liječnika svoga vremena je i zagovaranje agresivnije terapije. Nije se libio pripisati jake medikamente, koje je nazivao darom bogova, a također je bio i veliki pobornik puštanja krvi.[174]

Eristratus (grč. Ἐρασίστρατος, c. 304. – 250. g. pr. Kr.) je bio Herofilov suvremenik. O njegovom životu gotovo se ništa ne zna, osim da je rođen na otoku Kei. Često se navodi da je bio dvorski liječnik kralja Seleuka I Nikatora, ali jedino je sigurno da je dio života proveo u Aleksandriji.[175] Prema jednom antičkom navodu počinio je suicid nakon što je sam sebi dijagnosticirao neizlječivu bolest.[176]

Njegova anatomska istraživanja također su bila fokusirana na kardiovaskularni i živčani sustav. Prvi je opisao izgled i funkciju srčanih zalistaka te je detaljno istražio sustav arterija i vena sve do najsitnijih kapilara.[177] Prema Galenovu opisu može se zaključiti da je bio vrlo blizu otkrivanja kako krv cirkulira tijelom iako je prihvatio tradicionalni pristup u kojem arterije nose zrak, a ne krv.[178] Vjerojatno je prvi upotrijebio podvezivanje žila kako bi zaustavio krvarenje.[179] Također je posvetio pažnju anatomiji mozga te načinu na koji su živci i mozak povezani. I njemu se pripisuje podjela na motoričke i senzorne živce.

Za razliku od Herofila nije pribjegavao puštanju krvi ili jakim lijekovima, već je naglašavao važnost pravilne prehrane, redovitog vježbanja i održavanja higijene kao puta prema oporavku.[180]

Ono po čemu su Herofil i Erisistrat postali poznati još u svoje vrijeme su optužbe da su provodili vivisekciju nad osuđenim zatvorenicima u Aleksandriji. Prema antičkim autorima Ptolomej I i njegov nasljednik Ptolomej II ne samo da su poticali anatomska istraživanja, nego su dopuštali aleksandrijskim anatomistima da obavljaju sekciju na još živim zatvorenicima.[181] Iako za tvrdnje o dopuštenoj vivsekciji ne postoje čvrsti dokazi, nepobitno je da je tijekom 3. st. pr. Kr. u Aleksandriji postojala medicinska škola koja je naglašavala važnost istraživanja anatomije ljudskog tijela u medicinske svrhe. Procvat anatomije u Aleksandriji u najužoj je vezi s procvatom znanosti i učenja u gradu pod zaštitom prvih vladara ptolomejske dinastije.

Do kada se anatomska sekcija obavljala u Aleksandriji predmet je rasprave. Neki smatraju da se s istraživanjem prestalo već početkom 2. st. pr. Kr. te da je praksa nakratko obnovljena krajem 1. st. i početkom 2. st. po. Kr.[182] Ludwig Edelstein se poziva na antičke izvore, prije svega na Galena koji spominje da bi liječnici, ako žele steći neposredno znanje o anatomiji, morali posjetiti Aleksandriju gdje je sekcija ljudskog tijela još uvijek moguća.[183]

Sl. 26. Ulomak željezne pile. Pile su osim tesara mogli koristiti i antički kirurzi. (Sisak, 1. – 4. st., K81)
~ Fig. 26 Fragment of an iron saw used by carpenters, and maybe also ancient surgeons (Sisak, 1st – 4th c., K81)

as a separate field of medicine, even though the works in the Hippocratic Corpus contain an abundance of information about how the body and organs function. Generally speaking, ancient medicine did not believe a physician had to know anatomy. Not only was the dissection of the human body discouraged, it was long considered unthinkable, mostly due to Greek law (and taboos) that forbade touching a dead body.[167] But what was unthinkable to ancient Greeks, was actually part of a long tradition in Egypt. It was in Alexandria that Greek medicine and Egyptian knowledge of anatomy merged.

In the first half of the 3rd century BCE, a medical school in Alexandria encouraged dissection of the deceased for the purpose of improving knowledge of anatomy. Mummification allowed Egyptians the gain a vast knowledge of the internal structure of the human body. And although the practice of medicine and the practice of mummification in ancient Egypt were strictly separated, there was a certain exchange of knowledge. The important step was the founding of the Alexandrian library and museum by Ptolemy I c. 300 BCE, two important institutions that encouraged research and learning.[168]

The central figures of the Alexandrian school of anatomy were two anatomists, Herophilus and Erasistratus. They were both active in the first half of the 3rd century BCE. All their written works have been lost so everything we know about them is hearsay.[169]

Herophilos (Ἡρόφιλος, c. 335–280 BCE) is called the "Father of anatomy". He was born in Chalcedon (modern Turkey), but spent most of his life in Alexandria. It is believed he was Praxagora's student who also showed him Hippocrates' teachings. Although he accepted the humoral theory and adapted it slightly (pneuma or air played an important role for him), he put emphasis on research and experimentation, instead of the Hippocratic prognosis.[170]

Herophilus started the systematic dissection of the human body for the purpose of acquiring knowledge about the structures and functions of internal organs.[171] He was interested in the structure of the human body as a whole and named many parts of internal organs, especially the brain, which he considered the centre of consciousness and intellect.[172] In addition to brain, the focus of his research was the cardiovascular system. He was the first to describe the difference between veins and arteries, and rejected earlier thinking that arteries did not carry blood, only air. He explained the function of the pulse, and used it to establish diagnosis.[173] He did pioneering work on the nervous system and divided the nerves into sensory and motor ones.

174 von Staden (1989: 58–59); Hankinson (1998: 297–302)
175 Scaraborough (1985: 515–517)
176 Manger (2005: 110)
177 Scaraborough (1985); Nutton (2004: 135)
178 Galen. De Usu Part. vi. 12, vol. iii.
179 Manger (2005: 111)
180 Smith (1982: 399–409); Brain (1986: 15); Garofalo (1988: fr. 156–67, 231)
181 Celsus. De Medicina. 1. Praef. 23–26; Singer (1997: 25)
182 Nutton (2004: 213–214)
183 Temkin, Temkin (1967: 251)

DOGMATSKA MEDICINSKA ŠKOLA

Kao osnivači dogmatske škole medicine spominju se Hipokratov sin Tesal i zet Polib.[184] Kao najveći uzor ovog medicinskog pravca ističe se Hipokrat i njegov rad te rad Herofila i Erasistrata, aleksandrijskih anatomista.[185]

Škola je u svojem učenju naglašavala potrebu poznavanja unutarnje građe ljudskog tijela i unutarnjih procesa u tijelu tako da poznavanje ljudske anatomije igra veliku ulogu. Da bi se izliječila bolest, potrebno je poznavati koji procesi u tijelu je uzrokuju. Škola je shvaćala potrebu sekcije ljudskog tijela, ali su odbacivali vivisekciju kao amoralnu i nedostatnu.

Do saznanja o uzrocima bolesti dolazilo se neposredno, iskustvom, ali prije svega logičkim zaključivanjem.[186] Ne odbacuju potrebu za eksperimentima, ali im ne daju presudnu ulogu u potrazi za znanjem. Kao i Hipokrat naglašavaju individualni pristup svakom oboljelom te u obzir uzimaju i cijeli spektar vanjskih faktora koji djeluju na organizam. Liječnik treba saznati što više o životu pacijenta pa uzimanje anamneze ima veliki značaj.

Pripadnicima dogmatske škole često se zamjera da su zanemarivali praktičnu stranu medicine u potrazi za uzrocima bolesti.[187]

Uz Tesala i Poliba u najutjecajnije pripadnike dogmatske škole treba ubrojiti Diokla iz Karista i Praksagoru s Kosa.

Diokla iz Karista (grč. Διοκλῆς ὁ Καρύστιος, c. 375. – 295. g. pr. Kr.) već je Plinije Stariji prozvao drugim Hipokratom.[188] Većina njegovog praktičnog rada bila je usmjerena na dijetetiku i nutricionizam. Ono što ga pak čini slavnim, autorstvo je prvog anatomskog udžbenika, a pripisuje mu se da je prvi upotrijebio pojam anatomija kako bi opisao područje znanja.[189] Celsus mu također pripisuje izum medicinskog instrumenta za vađenje strijela ili projektila iz tijela, tzv. Dioklove žlice.[190]

Praksagora s otoka Kosa (grč. Πραξαγόρας ὁ Κῷος, c. 340. g. pr. Kr. – ?) još je jedna vrijedna figura dogmatske škole. Prihvatio je humoralnu teoriju, ali je broj tjelesnih tekućina povećao na čak jedanaest. Naglašavao je važnost poznavanja anatomije te mu se pripisuje da je prvi koristio puls u postavljanju dijagnoze iako je vjerovao da arterije sadrže samo zrak.[191]

Sl. 27. Željezne britve. Osim u muškoj kozmetici, mogle su poslužiti i pri medicinskim zahvatima. (Sisak, 1. – 4. st., K78 – 80)
~ Fig. 27 Iron razors that were used for male grooming, and maybe during medical procedures. (Sisak, 1st – 4th c., K78 – 80)

What makes Herophilus different from other physicians of the period was his willingness to use more aggressive treatments. He did not hesitate to prescribe strong medications, which he called the gift of the gods, and he was also a great supporter of bloodletting.[174]

Eristratus (Ἐρασίστρατος, c. 304–250 BCE) was Herophilos' contemporary. Almost nothing is known about his life, except the fact that he was born on the island of Ceos. It is often said that he was the court physician of King Seleucus I Nicator, but it is only certain that he spent part of his life in Alexandria.[175] According to an ancient story, he committed suicide after he diagnosed himself with an incurable disease.[176]

His anatomical research was also focused on the cardiovascular and nervous systems. He described the appearance and functions of heart valves and explored the system of arteries and veins in great detail.[177] According to Galen's report, he was probably very close to discovering how blood circulates through the body although he accepted the traditional approach that arteries carried air rather than blood.[178] He was probably the first to use ligation of blood vessels to stop bleeding.[179] He also looked at the brain's anatomy and the way the nerves and brain were linked. The division of nerves into motor and sensory is also attributed to him.

Unlike Herophilus, he did not resort to bloodletting or strong medications, but stressed that a proper diet, regular exercise and hygiene were a path to recovery.[180]

What made Herophilus and Erisistratus well–known even in their own time were charges that they practiced vivisection on prisoners in Alexandria. According to ancient authors, Ptolemy I and his successor Ptolemy II not only encouraged anatomical studies, but allowed Alexandrian anatomists to perform vivisection on living prisoners.[181] Although there is no hard evidence to support those claims, it is certain that during the 3rd century BCE there was a medical school in Alexandria that emphasized the importance of anatomical studies for medical purposes. The popularity of anatomy in Alexandria was closely related to the development of science and learning in a city under the protection of the first rulers of Ptolemaic dynasty.

It is not clear when research into anatomical dissections stopped in Alexandria.

184 Galen. *Comment*. in Hippocr. Epid. III. ii. prooem. vol. xvii. pt. i.
185 Manger (2005: 108)
186 Temkin, Temkin (1967: 184)
187 Manger (2005: 109)
188 Pliny. Natural History. xxvi. 6
189 Asimov (1972)
190 Celsus. De Medicina. VII. 5. 2B–3B van der Eijk (2000)
191 Steckerl (1958: fr. 7, 8, 9, 11.) Solmsen (1961: 150–167)

EMPIRIČKA MEDICINSKA ŠKOLA

Još se u antici empiričku medicinsku školu doživljavalo kao suprotan pol dogmatskoj školi. Nauk škole naglašavao je ulogu neposrednog iskustva i eksperimenta pod utjecajem filozofskog pravca empirizma.[192] Začetke empiričke medicine moguće je tražiti već u Empedoklovom nauku. Empiristi su među svoje pripadnike ubrajali i samog Hipokrata, iako se kao osnivači škole spominju Serapij iz Aleksandrije i Filin s Kosa (3. st. pr. Kr.). Serapij je prvi odbacio mogućnost stjecanja bilo kakvog znanja o bolesti i pacijentu na temelju logike, već je kao temelj svog medicinskog znanja postavio iskustvo.

Samo neposredno iskustvo može reći liječniku je li njegov pacijent na pravom putu prema izlječenju.[193] Empiristi smatraju da je se medicina razvila iz niza pokusa, a ne iz logičkog promišljanja o podrijetlu bolesti, za njih teorijske postavke dolaze kasnije.

Naglasak empiričke medicine je na terapiji. Liječnik ne mora znati zašto lijek djeluje, ali iz neposrednog promatranja pacijentove reakcije na terapiju uviđa djeluje li ona ili ne.

Pravu terapiju liječnik odabire na temelju triju uvjeta: promatranja bolesnika, pisanih svjedočanstava svojih prethodnika te na temelju analogije. Kada se liječnik prvi put susreće s određenom bolesti, važno je da terapiju prilagodi što sličnijoj bolesti s kojom ima iskustva. Ono u čemu se slažu s dogmatskom medicinskom školom je da su uzroci bolesti prirodni i da potječu od tjelesnih procesa, ali njihovo otkrivanje nije presudno za učinkovito liječenje. Što liječnik ima više iskustva u liječenju sličnih tegoba, to će njegova terapija biti uspješnija.[194]

Smatrali su i da je sekcija ljudskog tijela nepotrebna.[195] Inzistirali su na promatranju bolesnika i na detaljnom bilježenju postupka, zapisivanju simptoma, opisivanju sindroma i oboljenja. Njihova otvorenost novim procedurama, poštovanje prema Hipokratovom učenju i naglasak na praksi stvorili su od nekih empirista najobrazovanije liječnike svog vremena, ali i vrsne kirurge.[196]

Empirička medicinska škola bila je uspješna i za vrijeme Rimskog Carstva. Galen i Celsus hvale njezine predstavnike, vrsnost empirista pri odabiru i administriranju različitih ljekovitih pripravaka te inventivnost njihovih kirurških zahvata.[197]

Sl. 28. Najmanji i najveći primjerak željeznih škara iz fundusa antičkog odjela AMZ–a. (Sisak, 1. – 4. st., K76 – 77)
~ Fig. 28 The smallest and the largest iron shears from the Greek and Roman Collection at the AMZ. (Sisak, 1st – 4th c., K76 – 77)

Some believe it happened in the early 2nd century BCE, but the practice was briefly restored at the end of the 1st and early 2nd century CE.[182] Ludwig Edelstein quotes ancient sources, primarily Galen, who mentions that if physicians wanted to gain knowledge of anatomy they had to visit Alexandria where the dissection of human body was still possible.[183]

DOGMATIC SCHOOL OF MEDICINE

Thessalus and Polybus, Hippocrates' son and son-in-law, were believed to be the founders of the Dogmatic school of medicine.[184] They followed the works of Hippocrates as well as Herophilus and Erasistratus.[185]

The Dogmatic school emphasized the need for knowledge of the internal structure and processes in the human body so anatomical knowledge played a major role in its teachings. To cure a disease, it was necessary to know which processes in the body had caused it. The school supported the dissection of the human body, but rejected vivisection as immoral and insufficient.

Knowledge about the cause of disease was gathered through experience, and above all through logical conclusion.[186] Dogmatists did not dismiss the need for experiments, but they did not give it a central role in the pursuit of knowledge. Following Hippocrates, they emphasized the individual approach to every patient, and took into account a whole range of external factors that affected an organism. Physicians needed to know a lot about a patient's life so a person's medical history was of great importance. Members of the Dogmatic school were often accused of neglecting the practical side of medicine while searching for the causes of disease.[187]

Alongside Thessalus and Polybus, the most influential members of the Dogmatic school were Diocles of Carystus and Praxagoras of Kos.

Diocles of Carystus (Διοκλῆς ὁ Καρύστιος, c. 375–295 BCE) was called "Second to Hippocrates" by Pliny the Elder.[188] Most of his practical work was focused on dietetics and nutrition. What made him famous was the authorship of the first anatomical textbook, and it is believed that he was the first to use the term "anatomy" to describe a field of knowledge.[189] Celsus credited him with the invention of a medical instrument for extracting arrows or projectiles from the body, called Dioclean cyathiscus (Spoon of Diocles).[190]

Praxagoras of Kos (Πραξαγόρας ὁ Κῷος, c. 340 BCE–?) was another significant figure of the Dogmatic school. He accepted the humoral theory, but increased the number of bodily fluids to eleven. He emphasized the importance of anatomy. It is believed that he used the pulse to reach a diagnosis, although he thought that arteries contained only air.[191]

192 Manger (2005: 119)
193 Temkin, Temkin (1967: 194)
194 Deichgraber (1965: 291–292)
Walzer, Frede (1985: 24–25)
195 Manger (2005: 119)
196 Nutton (2004: 149)
197 Celsus. De Medicina. i. praef; Galen. De Compos. Medicam. sec. Gen. iv. 7, vol. xiii.; De Meth. Med. ii. 7, vol. x.

METODIČKA MEDICINSKA ŠKOLA

Na metodiste se često gleda kao na školu čiji nauk premošćuje jaz između dogmatske i empiričke škole. Metodizam se zapravo razvio kao reakcija na njihova učenja.[198] Oko osnivača ovog medicinskog pravca još uvijek postoje kontraverze. Nastanak škole može se smjestiti u široko razdoblje od kraja 2. st. pr. Kr. pa sve do prvih desetljeća nove ere.

Posebnost je metodičke medicinske škole u tome što odbacuje Hipokratovu humoralnu doktrinu. Metodisti vjeruju da se ljudsko tijelo sastoji od sićušnih čestica, atoma i pora te se time približavaju atomskoj teoriji grčkih filozofa Demokrita i Epikura.[199] Bolest u tijelu nastaje kada dolazi do abnormalnog gibanja tjelesnih čestica, atoma, ili do začepljenja pora.[200]

Za uspješno izlječenje nije važna prava dijagnoza ili poznavanje uzroka bolesti već odgovarajući tretman. Metodiste ne zanima koji je dio tijela zahvaćen bolešću. Pacijent kao individua također je nebitan, njegova dob, navike, životni prostor te klimatski i geografski faktori ne utječu na izbor terapije.[201] Iz toga proizlazi da ni uzimanje pacijentove povijesti bolesti tj. njegova detaljna anamneza ne igra nikakvu ulogu u pristupu liječenju.

Metodisti svode svoje liječenje na generalne principe ili stanja.[202] Upravo je Temison nepravilno kretanje atoma pretvorio u općenita stanja. Tako postoje samo tri osnovna stanja, tj. tri vrste bolesti: suho ili pogrčeno stanje, vlažno ili opušteno i kombinacija oba.[203] Sva se oboljenja mogu pribrojiti jednom od ova tri stanja. Kada liječnik pravilno prepozna bolest, tretman koji mora primijeniti, nameće se sam po sebi; on mora kod pacijenta izazvati stanje suprotno onom u kojem se oboljeli nalazi. Upravo je prepoznavanje tri osnovna stanja i primjena opće terapije srž njihove metode liječenja (grč. Μέθοδος) prema kojoj je cijeli ovaj pravac dobio ime.

Metodisti odbacuju važnost proučavanja anatomije i fiziologije ljudskog tijela kao korisnih za stjecanje znanja. Princip tri osnovna stanja provodili su uz manje preinake i u kirurgiji te je svaki zahvat imao točno propisanu proceduru s obzirom na stanje. Smatrali su da je njihov sustav učenja zatvoren i kompletan te da se cjelovito medicinsko znanje može steći u samo nekoliko mjeseci proučavanja.[204]

Vrhunac popularnosti metodički pristup liječenju doživio je u prvom stoljeću. Rimljani su ga preferirali jer je koristio blaže i ugodne pripravke te oboljele nije tjerao na drastične promjene.[205] Njihov sustav lagano se uklopio u potrebe urbane sredine poput Rima.

Najpoznatiji je predstavnik metodičke škole Soran iz Efeza (grč. Σωρανός). Prema *Sudi* prakticirao je medicinu u Aleksandriji i u Rimu za vrijeme vladavine Trajana i Hadrijana.[206] Spominje ga se kao autora više od 20 djela koja pokrivaju širok raspon medicinskog znanja.[207] Ono po čemu je ostao poznat je njegova rasprava o ginekologiji *O ženskim bolestima* u četiri sveska.

Sl. 29. Balzamarij niskog, spljoštenog tijela i visokog cilindričnog vrata. (Topusko, 2. st., K51)
~ Fig. 29 Unguentarium with a flattened low body and tall cylindrical neck. (Topusko, 2nd c., K51)

Sl. 30. Vrčić s reljefnim ukrasom od ljubičastog stakla. Mo gao se koristiti u kozmetici za čuvanje mirisa, ali i u medicini za ljekovite pripravke. (nepoznato nalazište, 1. st., K60)
~ Fig. 30 Jug with purple glass relief decoration was used for storing scented liquids, as well as remedies. (unknown site, 1st c., K60)

EMPIRIC SCHOOL OF MEDICINE

Even in ancient times, the Empiric school of medicine was perceived as a direct opposite of the Dogmatic school. The school's teaching emphasized the role of experience and experiment under the influence of empiricism.[192] The origins of empiric medicine can be traced back to Empedocles. Empiricists listed even Hippocrates among their members, although Serapion of Alexandria and Philinus of Kos (3rd century BCE) are considered founders of the sect. Serapion was the first to rejected acquiring any knowledge about the disease and patient based on logic, and introduced experience as the basis of his medical knowledge. Only direct experience could tell a physician whether his patient was on the right path to healing.[192] Empiricists believed medicine developed through a series of experiments, not through logical thinking, for them, theoretical assumptions came later.

In empiric medicine, emphasis was on therapy. A physician did not have to know why a treatment worked, but by observing how a patient responded to therapy he could tell whether it worked or not.

A physician would choose the right treatment based on three conditions: observation, written testimony of his predecessors and analogy. When a physician first encounters a new disease, it is important for him to use a treatment for a disease that is similar and he had encountered before. Empiricists agreed with the Dogmatic school of medicine that causes of disease originated in the body, but for empiricists, their detection was not crucial for an effective treatment. The more experience a physician had in treating similar problems, the more successful his therapy would be.[194]

They thought that dissection was unnecessary.[195] Observing a patient and making detailed notes on the treatment, symptoms, syndromes and illness was extremely important for them. Willingness to try new procedures, adherence to Hippocratic teaching, and emphasis on practice made the empiricists the most educated physicians of the period, and also excellent surgeons.[196]

198 Barnes et al. (1982: 2)

199 Demokrit (grč. Δημόκριτος, c. 460.–370. g. pr. Kr.), jedan od najutjecajnijih grčkih filozofa predsokratovskog razdoblja, najpoznatiji po svojoj teoriji o atomima. Danas ga se često naziva "ocem moderne znanosti". Nažalost, njegova djela su nam sačuvana samo u par fragmenata.
Epikur (grč.'Επίκουρος, c. 341.–270. g. pr. Kr.), utjecajan grčki filozof, utemeljitelj filozofskog pravca. Podučavao je da je svemir beskonačan, dok su događaji i pojave u njemu posljedica gibanja i interakcije atoma. Napisao je preko 300 djela od kojih su nam sačuvani samo fragmenti.
~ Democritus (Δημόκριτος, c. 460–370 BCE), one of the most influential Greek philosophers from the pre–socratic period, best known for his theory on atoms. Today he is often called the "father of modern science". Unfortunately, only a few fragments of his works have been preserved.
Epicurus (Επίκουρος, ca 341–270 BCE), an influential Greek philosopher, founder of the school of philosophy called Epicureanism. He taught that the universe was infinite, while the events and occurrences in it were consequence of the movement and interaction of atoms. He wrote more than 300 works of which only fragments have survived.

200 Manger (2005: 120)

201 Barnes et al. (1982: 6–7)

201 Temkin, Temkin (1967: 187)

203 Nažalost, Temisonov je opus izgubljen, sačuvani su samo kratki fragmenti u djelima drugih autora. Poznato je da je napisao nekoliko djela o medicini, ali čak nije sigurno kojim jezikom je pisao.
Manger (2005: 120)

204 Nutton (2004: 149)

205 Temkin, Temkin (1967: 190)

206 Suda On Line. σ851, σ852 (03.01.2017.)

207 Soranova djela govore o internoj medicini, kirurgiji, terapeutici (materia medica), higijeni, anatomiji, oftamologiji, nomenklaturi i povijesti medicine.
~ Soranus wrote on internal medicine, surgery, therapeutics (materia medica), hygiene, anatomy, ophthalmology, nomenclature and the history of medicine.
Temkin (1956: xxiv)

To je jedina klasična rasprava na tu temu koja nam je sačuvana u originalu, i zaslužna je za većinu naših znanja o položaju babica i ženskih doktora u njegovo vrijeme.[208]

U kasnijim se razdobljima na Soranovu inačicu metodizma gledalo kao na standardnu i njegovo je učenje imalo utjecaj na liječnike i u srednjem vijeku. Metodizam je kao liječnički pravac imao odjeka čak i u medicini 17. i 18. st. te se tek u 19. st. u potpunosti gubi njegov utjecaj. Zbog toga se s pravom može tvrditi da je bio jedan od najuspješnijih antičkih znanstvenih sustava.[209]

Sl. 31. Dvije boce izrađene su od stakla svijetlo zelene boje i datiraju se u 1. st. dok je najmanja boca, izrađena od zelenoljubičastog stakla iz 3. – 4. st. (nepoznato nalazište, K57 – 59)
~ Fig. 31 Two light green glass bottles from the 1st century CE. The smallest green–purple glass bottle dates between the 3rd and 4th century CE. (unknown site, K57 – 59)

Sl. 32. Staklene urnetice izrađene iz stakla svijetlozelene boje često su imale primjenu u kozmetici, ali su bile korištene i za čuvanje različitih ljekovitih pripravaka. (Bakar, 1. st., K55 – 56)
~ Fig. 32 Small urns made of light green glass that were often used in cosmetics, but also for storing various remedies. (Bakar, 1st c. CE, K55 – 56)

Empiric school of medicine was successful even during the Roman Empire. Galen and Celsus praised its representatives, their expertise in selecting and administering various herbal remedies, and the inventiveness of their surgeons.[197]

METHODIC SCHOOL OF MEDICINE

Methodists are often viewed as the medical school whose doctrine bridged the gap between dogmatic and empiric schools. Methodism was actually developed as a reaction to their teachings.[198] There are still controversies concerning who was the founder of this medical sect. The school was probably founded between the end of the 2nd century BCE and the first decades of the 1st century CE. We do know what was taught at the school since it was discussed by Galen and Cesus.

The Methodic school of medicine rejected the Hippocratic humoral doctrine. Methodists believed that the human body was made up of tiny particles, atoms, and pores, so their teachings were close to the atomic theory of Greek philosophers Democritus and Epicurus.[199] A person would get sick if the atoms moved irregularly, or if the pores were blocked.[200]

In curing a patient, the proper treatment was essential, and not the correct diagnosis or knowledge about the cause of the disease. Methodists did not care which part of the body was affected. A patient as an individual was also irrelevant. His age, habits and habitat, as well as climatic and geographical factors, did not influence the choice of therapy.[201] Taking a patient's medical record, i.e. his detailed anamnesis, played no role in the school's approach to healing.

Methodists reduced their treatment to general principles or conditions. Themison turned the abnormal movement of atoms into general conditions.[202] There were only three basic conditions or types of disease: a dry or constricted, moist or relaxed, and a combination of the two.[203] All diseases belonged to one of these three conditions. Once the physician correctly identified the disease, the treatment would become apparent. For the essence of their treatment is recognising these three conditions and administering treatment (Μέθοδος) which also gave the school its name.

Methodists rejected the importance of anatomy and physiology as useful tools to gain knowledge. The principle of the three general conditions was applied even in surgery, but with minor modifications. Every procedure had a clearly prescribed procedure with respect to the general condition. They believed that their system of learning was finite and complete, and that full medical knowledge could be acquired in just a few months.[204]

The Methodic school of medicine reached its peak in the 1st century. Romans favoured their approach because they used milder and more pleasant remedies, and did not force patients to make radical changes.[205] Their system adapted nicely to the needs of urban areas like Rome.

The most important member of the Methodic school of medicine was Soranus of Ephesus (Σωρανός). According to Suda, Soranus practiced medicine in Alexandria and Rome during the reigns of emperors Trajan and Hadrian.[206] He was mentioned as the author of more than 20 works that covered a wide range of medical knowledge.[207] He remains famous for his treatise on gynaecology in four volumes. It is the only classical treatise concerning the subject of gynaecology that has been preserved in the original. Most of our knowledge on the social status of midwives and female physicians in antiquity comes from Soranus.[208]

In later periods, Soranus' version of Methodism was accepted as standard, and his teachings had an impact on physicians during the Middle Ages. Methodism as a medical approach even influenced medicine in the 17th and 18th century. It became obsolete only in the 19th century. Methodism was one of the most successful scientific systems in antiquity.[209]

208 Nutton (2004: 149)
Temkin (1956: xxiv)
209 Temkin, Temkin (1967: 190)

GRČKA MEDICINA U RIMU
~
GREEK MEDICINE IN ROME

Asimilacija grčke medicinske teorije i prakse u rimsko društvo sigurno je jedan od najznačajnijih događaja u povijesti medicine. Upravo je činjenica da su Rimljani prihvatili grčku medicinu kao svoju zaslužna za to da je ona postala temelj zapadne medicine. Bez rimskog utjecaja vjerojatno je da bi ona ostala na razini na kojoj su danas preostale antičke medicinske tradicije poput babilonske ili egipatske.[210]

Iako su Rimljani formalno pokorili Grčku tek 146. g. pr. Kr. rimsko je društvo već od 4. st. pr. Kr. bilo pod sve većim utjecajem grčke kulture i znanosti.[211] Sigurno su utjecaj u ranoj razmjeni ideja imale grčke kolonije na jugu Italije (Magna Graeca). Već u 3. st. pr. Kr. Rimljani imaju razvijen vrlo opsežan vokabular vezan uz medicinu i liječenje, daleko prije osvajanja grčkog teritorija.[212]

Kakva je bila tradicionalna rimska medicina prije presudnog grčkog utjecaja? Prvo treba imati na umu da se Rim razvio iz malog sela u dolini Tibera te da je rano rimsko društvo prije svega bilo pastoralnog karaktera i da je ovisilo o poljoprivredi. Neki antički autori idu tako daleko da tvrde da, prije Grka, Rimljani nisu imali profesionalnih liječnika. Glava svake obitelji, *pater familias*, bio je odgovoran za zdravlje svoje obitelji, svojih robova i životinja. Svaka je kuća imala malu zalihu ljekovitih biljaka i oltar posvećen kućnim bogovima u kojem su se mogle obavljati molitve i polagati žrtve za ozdravljenje. Sama priprema ljekovitih pripravaka prepuštala se ženama ili robovima. Ranu rimsku medicinu moguće je vidjeti kao spoj tradicije, magije i folklora koja zapravo održava društvo u kojem je nastala. Iako su Rimljani vjerovali da bogovi upravljaju svakim događajem u prirodi i u ljudskom životu, među ranim rimskim panteonom nije identificirano božanstvo zaslužno prvenstveno za liječenje i ozdravljenje. Izgleda da su Rimljani u početku očekivali da će im bogovi podariti dobro zdravlje i sačuvati ih od bolesti kroz obavljanje svakodnevnih rituala i žrtvovanja. Kada bi bolest pak nastupila doživljavali su je kao iskaz ljutnje povrijeđenog božanstva ili utjecaj zlog duha.[213]

Jedna od značajnih karakteristika rimskog društva bila je otvorenost prema stranim utjecajima. Rimljani su prihvaćali tuđe bogove i običaje dok god su ih mogli asimilirati sa svojima. Poput Egipćana, u početku su Rimljani imali

Sl. 33. Rimska keramika fine izrade, poznata kao terra sigilata, mogla je biti korištena i u farmaciji. (Sisak, 1. – 3. st., K38 – 41)
~ Fig. 33 Roman fine–ware ceramic vessels, known also as terra sigillata, that could have been used in pharmacy. (Sisak, 1st – 3rd c., K38 – 41)

GREEK MEDICINE IN ROME

The assimilation of Greek medical theories and practices into Roman society is certainly one of the most significant events in the history of medicine. Roman acceptance of Greek medicine as their own is the reason Greek medicine became the basis of Western medicine. Without Roman influence, Greek medicine would today have the same relevance as ancient medical traditions of Babylon and Egypt.[210]

Even though Rome did not conquer Greece until 146 BCE, the influence of Greek culture on Roman society started in the 4th century BCE.[211] Greek colonies in southern Italy (Magna Graecia) had a lot of influence in the early days. By the 3rd century BCE, Romans developed an extensive vocabulary related to medicine and healing, long before the conquest of Greece.[212]

What was traditional Roman medicine like before the Greeks? Rome developed from a small village in the valley of the river Tiber, and early Roman society was primarily pastoral and depended on agriculture. Some ancient authors claim that Romans did not have professional physicians before the Greeks. The head of the family, *Pater familias*, was responsible for the health of all family members, slaves and animals. Every house had a small supply of medicinal plants and a temple dedicated to the household gods where healing prayers and sacrifices could be performed. The preparation of medicinal remedies was reserved

210 Nutton (2004: 157)
211 Manger (2005: 115)
212 Langslow (1999: 183–226)
213 Addison Jayne (1962: 389)

Sl. 34. Antoninijan, novac cara Galijena, na aversu ima njegov prikaz, dok je na reversu prikazana Salus koja u jednoj ruci drži skeptar, dok drugom rukom iz patere hrani zmiju koja se uzdiže s oltara. (Komin – skupni nalaz, 267. – 268. g., K14)
~ Fig. 34 Antoninianus, a coin of emperor Gallienus, with his portrait on the obverse. On the reverse, Salus is holding a sceptre in one hand and feeding a snake rising from the altar with the other. (Komin – group find, 267 – 268 CE, K14)

bogove zaštitnike svakog unutarnjeg organa pa im nije predstavljalo problem prihvatiti još jedno božanstvo.[214] Pisani izvori vrlo dobro dokumentiraju točan datum dolazak grčkih bogova liječništva, prvo Apolona, a zatim i Asklepija u Rim na službeni poziv rimskog Senata.

Sa službenim priznavanjem Asklepijevog, tj. Eskulapovog kulta grčkim je liječnicima omogućen službeni pristup Rimu. Za razliku od novog božanstva Rimljani su grčke liječnike prihvatili s manje oduševljenja. Katon Stariji nazivao je grčke liječnike najgorim neprijateljima rimskog naroda i optuživao ih je da namjerno truju i ubijaju svoje klijente.[215]

Kako je s vremenom rimsko društvo bilo pod sve većim utjecajem Grčke tako se i položaj grčkih liječnika u Rimu itekako poboljšao. Već je u 1. st. pr. Kr. uobičajeno konzultirati grčkog liječnika u slučaju bolesti. Uskoro se grčka medicina se toliko udomaćila u Rimu da možemo govoriti o grko–rimskoj medicinskoj sredini u kojoj grčki liječnici rade na rimskim pacijentima.

Iako rimskom medicinom dominira lika Galena, prije nego što mu se posvetimo, treba spomenuti neke od važnih liječnika koji su obilježili razvoj grčke medicine pod okriljem Rima.

ASKLEPIJAD IZ BITINIJE

Više pažnje treba pokloniti Asklepijadu iz Bitinije (grč. Ἀσκληπιάδης, c. 129. – 40. g. pr. Kr.) na čijem se učenju temelje principi metodičke škole. Plinije spominje da je Asklepijad došao u Rim kao retoričar, ali je brzo uvidio da mu prakticiranje medicine može donijeti veću korist i slavu te je s vremenom ondje osnovao i svoju školu medicine.[216] Odbacio je humoralnu teoriju i približio se

for women or slaves. Early Roman medicine can be seen as a combination of tradition, magic and folklore which reflected Roman society. Romans believed that gods influenced all the events in nature and human lives, but we cannot identify a deity credited primarily to treat and cure disease among the early Roman pantheon. It seems that Romans initially expected their gods to give them good health and save them from disease if they performed daily rituals and sacrifices. When disease occurred, it was perceived as anger from the offended deity, or influence from a malevolent spirit.[213]

One of the most important characteristics of Roman society was its openness to foreign influences. Romans accepted foreign gods and customs, as long as they were able to assimilate them into their tradition. Like the Egyptians, Romans had divine protectors for each and every internal organ so it was not a problem for them to accept another deity.[214] Written sources documented the arrival of Apollo and Asclepius, Greek gods of medicine, as they were officially invited by the Roman Senate.

When the cult of Asclepius was officially recognised, Greek physicians were given access to Rome. Unlike the new deity, Romans accepted Greek physicians with less enthusiasm. Cato the Elder called Greek physicians the worst enemies of the Roman people, and accused them of deliberately poisoning and killing their clients.[215]

Over time, Greek influence on Roman society grew, so the position of Greek physicians improved significantly. In the 1st century BCE, it was normal to consult a Greek physician in cases of illness. Soon Greek medicine became so assimilated into the Roman society that Greek physicians were free to work on Roman patients.

Although Roman medicine was dominated by Galen, we need to mention some other important physicians that marked the development of Greek medicine under Rome.

ASCLEPIADES OF BITHYNIA

The principles of the Methodic school of medicine were founded on the teachings of Asclepiades of Bithynia (Ἀσκληπιάδης, c. 129 – 40 BCE). Pliny mentioned that Asclepiades arrived in Rome as a rhetorician, but he quickly realized that practice of medicine could bring him greater gain and glory so he eventually founded his own school of medicine.[216] He rejected the humoral theory and preferred the atomists' view that irregular movement of atoms which form the human body can clog pores and cause disease. According to ancient sources, he divided disease into two large groups, acute and chronic.[217] It was his practical approach that made him popular in Rome. His therapy included all the things Romans love. In order to restore the body's harmony, Asclepiades prescribed light meals, massages, baths and exercise. His regime also encouraged the drinking of wine, which Romans never considered a bad idea.[218] Although his treatment was very popular among Roman patients, it did not bring him the respect of intellectual circles, and Pliny the Elder and Celsus were very critical of his work, and the work of his followers.[219]

ARCHAGATUS — PHYSICIAN AND EXECUTIONER

According to Pliny, the first Greek physician in Rome was Archagatus. He arrived in 219 BCE.

Argahat was the first physician who received public money for his services. He was given Roman citizenship, opened a clinic and won the trust of his patients. Over time, because of his excessive use of surgery, he was nicknamed the "*Butcher*" (*Crucifex*) and was forced to return to Laconia.[220]

214 Manger (2005: 114)

215 Katon Stariji (lat. Marcus Portius Cato, 234. – 149. g. pr. Kr.), rimski senator i pisac. Poznat je po svojoj konzervativnosti i otvorenom otporu prema helenizaciji Rima. Autor je brojnih djela od kojih su najpoznatija O Poljoprivredi (lat. De Agri Cultura) te Postanci (lat. Origines).
~ Cato the Elder (Marcus Portius Cato, 234–149 BCE), Roman senator and writer. Known for his conservatism and open hostility toward the hellenisation of Rome. Author of numerous works, On Agriculture (*De Agri Cultura*) and Origines are the most important ones.
Plutarch. Cato the Elder. 23, 3–4.

216 Pliny. Natural History. XXIX, 6, 12–14; Temkin, Temkin (1967: 177); Israelowich (2015: 13)

atomistima, naglašavajući da nepravilno gibanje atoma koji grade ljudsko tijelo, začepljuje pore i uzrokuje bolest. Antički mu izvori pripisuju da je podijelio bolesti na dvije velike skupine, akutne i kronične.[217] Ono što je osvojilo rimsku publiku bio je zapravo njegov praktični pristup. Njegova je terapija bila blaga, uključivala je ono što su Rimljani ionako voljeli. Kako bi povratio tjelesnu harmoniju, Asklepijad im je pripisivao laganu prehranu, masaže, kupke i vježbu. Njegov je režim poticao ispijanje vina, što kod Rimljana nikako nije moglo biti na odmet.[218] Međutim, iako je njegov pristup liječenju bio vrlo popularan među rimskim pacijentima, nije mu donio poštovanje intelektualnih krugova, tako da Plinije Stariji i Celsus itekako kritiziraju njegov rad, ali i rad njegovih sljedbenika.[219]

ARHAGAT — LIJEČNIK I KRVNIK

Plinije spominje da je prvi grčki liječnik u Rimu bio Arhagat, koji je u Rim stigao 219. g. pr. Kr.

Argahat je bio prvi liječnik koji je plaćen za svoje usluge javnim sredstvima. Dobio je rimsko građansko pravo i otvorio ordinaciju te je u početku čak zadobio povjerenje svojih klijenata. S vremenom je, zbog čestog pribjegavanja kirurškim zahvatima, zadobio nadimak Krvnik (lat. Crucifex) te je bio primoram vratiti se u Lakoniju.[220]

CELSUS I *DE MEDICINA*

Najznačajnija figura u razvoju rimske medicine na prijelazu stare u novu eru zasigurno je Celsus (lat. Aulus Cornelius Celsus c. 25. g. pr. Kr. – 50 g. po. Kr.), rimski enciklopedist. Vrlo se malo zna o njegovom životu, osim da je djelovao za vrijeme careva Augusta i Tiberija. Ne zna se gdje je živio (spominju se Rim i *Galia Narbonensis*), a nije sigurno ni je li se praktično bavio medicinom.[221]

Ono po čemu je Celsus zaslužio mjesto u povijesti antičke medicine njegova je *De Medicina*, djelo o medicini enciklopedijskih razmjera. Napisano je vjerojatno oko sredine 1.st. i jedini je sačuvani dio mnogo većeg enciklopedijskog djela, koji je osim medicinskog djela, sadržavao tadašnja znanja o agrikulturi, retorici i umijeću ratovanja.[222] Od preostalih dijelova sačuvani su samo fragmenti u djelima drugih antičkih autora, npr. Columellina *De Re Rustica* djelomice se oslanja na Celsusovo djelo o poljoprivredi.[223]

De Medicina slijedi tripartitnu podjelu medicine koju je ustanovio još sam Hipokrat: dijetetika, farmakologija i kirurgija.[224] U uvodnom dijelu Celsus se bavi teorijskim postavkama medicine te daje povijesni pregled njenog razvoja. Priznaje Grcima da su zaslužni za odvajanje medicine od filozofije te za

Sl. 35. Igle s ušicom, kakve poznajemo i danas, koristile su se za šivanje, kako tekstila tako i kože pri zatvaranju rana. (Sisak, 1. – 4. st., K83)
~ Fig. 35 Eyed–needles, not unlike the modern ones, were used for sewing and closing wounds (Sisak, 1st – 4th c., K83)

CELSUS AND *DE MEDICINA*

At the beginning of 1st century CE, The most important figure in Roman medicine was Celsus (Aulus Cornelius Celsus c. 25 BCE–50 CE), a Roman encyclopaedist. Very little is known about his life except that he worked during the reign of emperors Augustus and Tiberius. We do not know where he lived (probably in Rome or *Galia Narbonensis*), or whether he practiced medicine or not.[221]

Celsus deserves a place in the history of ancient medicine because of *De Medicina*, the only surviving part of a much larger encyclopaedia. It was probably written in the mid 1st century CE. Except medicine, the lost portions of the encyclopaedia probably included volumes on agriculture, law, rhetoric and the military.[222] Only fragments are preserved in the works of other ancient authors, and Columella's *De Re Rustic*a partly relied on Celsus's work on agriculture.[223]

De medicina follows a tripartite division of medicine founded by Hippocrates: dietetics, pharmacology and surgery.[224] In the introduction, Celsus deals with theoretical concepts of medicine and provides a historical overview of its development. He admitted that Greeks were responsible for the separation of philosophy and medicine, as well as the development of medicine as a separate scientific discipline.[225] Celsus is also responsible for most of what we know about the development and practice of different ancient schools of medicine.[226] Celsus rejected all three dominant schools of medicine, although he pointed out that some of their teachings could be used in the practice of medicine. For Celsus, the practice of medicine was a rational enterprise and an art form.

Celsus emphasized that every individual is responsible for his health and that people must have a basic knowledge of what had a positive or negative effect on the body. Celsus was aware how important patient–physician relationship was, and considered that both patient and physician were responsible for the healing process. Celsus used the noun friend (*Amicus*) to indicate a physician. It was very important that the physician and patient build a friendly relationship based on mutual trust, because it was the prerequisite for successful treatment as well as a good understanding of medicine.[227]

217 Caelius Aurelianus (5. st. po. Kr.), rimski liječnik i pisac medicinskih djela. Najpoznatiji je po prijevodu djela Sorana iz Efeza s grčkog na latinski.
~ Caelius Aurelianus (5th c. CE), Roman physician and writer of medical works. He is best known for translating works of Soranus into Latin.
Caelius Aurelianus. De Morb. Chron. iii. 8. p. 469

218 Pliny. Natural History. VII. 37, 23. 22; Manger (2005: 116)

219 Nutton (2004: 160)

220 Pliny. Natural History. XXIX, 6, 12–14; Israelowich (2015: 13)

221 The McGraw–Hill encyclopedia of world biography (1973: 448D); Langslow (2000: 43); Nutton (2004: 166)

222 Manger (2005: 117)

223 Lucije Junije Moderat Kolumela (lat. Lucius Junius Moderatus Columella, 4. – c. 70.g. po. Kr.) najznačajniji je rimski autor djela o poljoprivredi, *De Res Rustica*. Na njegov tekst osim Celsusa utjecala djela Katona starijeg i Marka Terencija Varra.
~ Lucius Junius Moderatud Columella (4 – c. 70 CE) was the most important Roman author of works on agriculture. His Agriculture (*De Res Rustica*) was influenced by earlier texts by Celsus, Cato the Elder and Marcus Terentius Varro.
Kenney, Clausen (1982: 973)

224 *De Medicina* je napisana u osam knjiga koje pokrivaju sljedeće teme: I Prehrana, higijena i blagodati vježbe, II Uzroci bolesti, simptomi i prognoza, III Tretman bolesti, IV Anatomski opis izabranih bolesti, V Lijekovi, VI Kožna oboljenja, VII Klasična kirurgija i VIII Tretiranje prijeloma i dislokacija.
~ *De Medicina* was written in eight books that cover the following topics: I Diet, hygiene and the benefits of exercise, II The cause of disease, its symptoms and prognosis, III Treatment of diseases, IV Anatomical description of selected diseases, VI Medicines, VII Skin diseases, ulcers and lessions, VII Classic surgery and VIII Treatment of fractures and dislocations.
Simmons (2002); On Medicine – De medicina. World Digital Library. (19.11.2016.)

njen razvoj kao posebne znanstvene discipline.[225] Upravo nam Celsus prenosi dobar dio našeg današnjeg saznanja o razvoju i praksama različitih medicinskih pravaca.[226] Celsus odbacuje sva tri dominantna medicinska pravca tog vremena, iako naglašava da se dijelovi njihovog nauka mogu iskoristiti u prakticiranju medicine. Za Celsusa je bavljenje medicinom racionalni pothvat, ali i pravo umijeće.

Naglašava da je svaki pojedinac odgovoran za svoje zdravlje te da mora posjedovati osnovno znanje o tome što šteti, a što ima ima pozitivan utjecaj na njegovo tijelo. Celsus je bio svjestan važnosti odnosa pacijent — liječnik te smatra da su oba dionika odgovorna za proces izlječenja. Celsus u svom dijelu za liječnika koristi naziv prijatelj (lat. amicus). Vrlo je važno da liječnik i pacijent izgrade prijateljski odnos zasnovan na međusobnom povjerenju jer ono je, uz solidno znanje medicine, pretpostavka za uspješno liječenje.[227]

NAČINI LIJEČENJA PSIHIČKIH BOLESTI

Dio svog djela *De Medicina* Celsus je posvetio psihičkim oboljenjima. Dijeli ih na freniju (lat. phrenitis), delirij praćen vrućicom, melankoliju, bolest koju prate zamišljene slike i poremećeno rasuđivanje (vjerojatno shizofrenija), delirij uzrokovan strahom (fobije), letargiju, komu i epilepsiju (lat. morbus comitialis). Prvi je upotrijebio pojam ludilo (lat. insania) kako bi opisao određena teška oboljenja.[228] Među propisanim načinima liječenja oboljelih pacijenata navodi puštanje krvi, namjerno strašenje pacijenta, laksative, izlaganje potpunoj tami, ali i blažu terapiju, poput umirujuće glazbe, putovanja, bavljenja sportom, čitanja na glas i masaže.

Sl. 36. Dvostrukim iglama različitih oblika i materijala zajedničko je što su na oba kraja zašiljene, dok im dužina i debljina vrhova mogu varirati. (Sisak, 1. – 4. st., K84 – 88)
~ Fig. 36 A common feature in double needles of varying sizes and materials is a pointed end on both sides, while their length and width can vary. (Sisak, 1st – 4th c., K84 – 88)

TREATMENT OF MENTAL ILLNESS

Celsus dedicated part of his work *De Medicina* to mental illnesses. He divided them into phrenitis, fever accompanied by delirium, melancholy, depression, disease accompanied by false images and disordered judgment (probably schizophrenia), delirium caused by fear (phobia), lethargy, coma and epilepsy (*Morbus comitialis*). He was the first to use the term insanity (*Insania*) to describe certain serious disorders.[228] His treatments for mental patients included bloodletting, deliberately frightening patients, laxatives, exposure to total darkness, but also milder procedures such as soothing music, travel, sports, reading aloud and massages.

225 Nutton (2004: 166)
226 Manger (2005: 120)
227 Petridou, Thumiger (2016: 336)
228 Harris (2013: 65, 269, 304)

RIMSKA MEDICINA
~
ROMAN MEDICINE

Sve su tri ranije spomenute medicinske škole imale svoje predstavnike u Rimu, gradu u kojem su djelovale. S prijelazom u novu eru, liječnici, iako još uvijek većinom Grci, djeluju u dominantno rimskom ambijentu, stoga možemo govoriti o rimskoj medicini. U istoj mjeri u kojoj lik Hipokrata dominira grčkom medicinom, lik i djelo Galena zauzima centralnu poziciju u razvoju rimske medicine.

GALEN

Nenadmašan u svom poznavanju medicine, ali i filozofije, ovaj je grčki liječnik utjecao na razvoj brojnih znanstvenih disciplina vezanih uz polje medicine, posebice anatomije, fiziologije, patologije, farmakologije i neurologije te filozofije i logike. Često ga se nazivalo medicinskim papom srednjeg vijeka te mentorom renesansnih anatomista i fiziologa, što su imena koja opravdavaju njegov utjecaj na razvoj srednjevjekovne i rane novovjekovne medicine.[229] Svojim pisanim djelima obilježio je i bizantsku, ali i medicinu Bliskog Istoka.[230]

Kako je česta tema Galenovih djela upravo on sam, njegov životni i profesionalni put dobro su nam poznati. Aelije ili Klaudije Galen rođen je 129. godine u Pergamu, jednom od ekonomskih i kulturnih centara Bliskog Istoka.[231] Njegov otac Aelije Nikon potrudio se da mladi Galen dobije najbolje moguće obrazovanje te ga je u početku je pokušao usmjeriti prema karijeri u filozofiji.[232]

Kada je Galen imao 16 godina, Nikonu se u snu obratio nitko drugi nego bog liječništva Asklepije što je oca nagnalo da Galena usmjeri na proučavanje medicine. Galen je počeo učenje u Asklepijevom hramu u Pergamu. Nakon smrti oca (149. li 150. g.) putuje Sredozemljem te dalje uči medicinu u Smirni i Korintu, redom od učitelja koji pripadaju Hipokratovoj tradiciji. Velik utjecaj na njegovo obrazovanje ima i odlazak u Aleksandriju, gdje je imao priliku učiti anatomiju.[233] U Pergam se vraća 157. godine i prihvaća mjesto liječnika u gladijatorskoj školi, gdje je proveo četiri godine. Tijekom tog razdoblja imao je priliku spojiti već naučeno s praksom. Uočava važnost prehrane, vježbe i higijene u prevenciji bolesti, ali proširuje i svoje znanje anatomije, posebice poznavanje prijeloma i teških trauma.[234]

Sl. 37. Gema od karneola na kojoj je urezan lik božice MInerve koja sjedi na tronu, pored nje je štit iznad kojeg se izvija zmija. (Resnik, 1. – 4. st., K12)
~ Fig. 37 Carnelian gem with an engraving of goddess Minerva sitting on a throne with a shield next to her. A snake coils above the shield. (Resnik, 1st – 4th c., K12)

All three aforementioned schools of medicine had their representatives in Rome. With the beginning of the new era, physicians, although still mostly Greeks, operated in a predominantly Roman environment so we can call it Roman medicine. Galen occupies the central position in the development of Roman medicine to the same degree that the figure of Hippocrates dominated earlier Greek medicine.

GALEN

Unparalleled in his knowledge of medicine and philosophy, this Greek physician influenced the development of many scientific disciplines related to the field of medicine, particularly anatomy, physiology, pathology, pharmacology, neuroscience, philosophy and logic. He is often called the "Medical pope of the Middle Ages" and "Mentor of Renaissance anatomists and physiologists", names that justify his impact on the development of medieval and early modern medicine.[229] His works defined Byzantine medicine and medicine of the Middle East.[230]

Galen is a frequent topic in his own works so his life and career are well known. Aelius or Claudius Galenus was born in Pergamum, one of the economic and cultural centres of the Middle East, in 129 CE.[231] His father, Aelius Nicon made sure that young Galen got the best education possible. He initially tried to steer his son toward a career in philosophy.[232]

229 Manger (2005: 120)
230 Nutton (2004: 216)
231 Nutton (1973: 158–171)
232 Rocca (2003: 2)
233 Galen. De anatomicis administrandibus.; Temkin, Temkin (1967: 250); Rocca (2003: 4)
234 Nutton (1973: 158–171)

U Rim, u kojem će provesti ostatak života, odlazi 162. godine. Da bi privukao pozornost rimske publike, a time i potencijalne klijente, Galen je svoje poznavanje medicine, ali i filozofije demonstrirao javno te se često sukobljavao s protivnicima i neistomišljenicima. Postao je poznat po javnim anatomskim i fiziološkim demonstracijama, koje je pažljivo planirao, te predavanjima.[235] Jedan od njegovih prvih poznatih klijenata bio je filozof Eudem, kojeg je Galen uspješno izliječio od napada malarije. Iako su protivnici kritizirali njegov pristup liječenju, koji je naglašavao prognozu, Eudem je bio dovoljno zahvalan da ga preporuči svojim prijateljima u višim krugovima.[236]

Galenov uspon prema vrhu obilježilo je i izbijanje epidemije za vrijeme vladavine Marka Aurelija, prozvane antoninskom kugom.[237] Nakon smrti Lucija Vera, suvladara Marka Aurelija, Galen postaje osobni liječnik carskog nasljednika, budućeg cara Komoda, što je i ostao dobrim djelom Komodovog života.[238] Upravo se u ovom razdoblju Galen posvećuje pisanju svog opusa.

Zadnja desetljeća Galenovog života manje su poznata. Bio je jedan od liječnika na dvoru Septimija Severa, a moguće i mladog cara Karakale.[239] Točna godina njegove smrti također je upitna, te je različiti autori smještaju od 199. do čak 217. godine.[240]

GALENOVA MEDICINA

Neupitan utjecaj na Galenovo shvaćanje i prakticiranje medicine imalo je njegovo obrazovanje. Njegovi su učitelji redom prihvaćali Hipokratovo učenje pa je Hipokrat uvelike oblikovao Galenov nauk. Međutim, Galenova fasciniranost Hipokratom otišla je i korak dalje te se Galen počeo poistovjećivati s ocem grčke medicine. S vremenom je Galen kroz svoja djela i kroz komentare Hipokratovih djela počeo oblikovati Hipokrata na svoju sliku.[241]

Prema Galenu se nutrijenti, tvari koje pojedinac unosi u svoj organizam, pod utjecajem životne vatre iz srca pretvaraju u tjelesne tekućine. Karakteristike unesenog nutrijenta utječu na povećanje tjelesne tekućine koju stvaraju. Tako nutrijenti koji imaju topla svojstva stvaraju u organizmu višak žuči koja ima topla svojstva, dok su hladni nutrijenti odgovorni za višak sluzi.[242] Iz toga slijedi da je upravo unos određenih nutrijenata kriv za pojavu bolesti određenih svojstava. Uzrok bolesti uvijek je prirodan i odgovornost je liječnika da uzrok i tijek bolesti objasni prirodnim procesima.

Drugi aspekt Galenove medicine koji se razvio pod utjecajem Hipokrata, njegova je orijentiranost na anatomiju i fiziologiiju. Galen smatra da je za dobrog liječnika presudno poznavanje unutarnje građe ljudskog tijela i njegovih unutarnjih procesa.[243] Galen naglašava praktični pristup učenju anatomije, u kojem upravo sekcija ima presudnu ulogu. Kako je u 2. st. sekcija ljudskih tijela bila zabranjena diljem Carstva, Galen je anatomiju proučavao secira-

Sl. 38. Spatula kojoj jedan kraj završava pravokutnom pločicom zaobljenih rubova, dok se drugi kraj sužava. (Sisak, 1. – 4. st., K90)
~ Fig. 38 Spatula with a rectangular recipient on one end, tapering towards the other end. (Sisak, 1st – 4th c., K90)

Sl. 39. Detalj spatule s prstenastim ukrasom na prijelazu držača u pločicu. Neki autori smatraju da su ovakvi ukrasi imali i funkciju, npr. spriječiti da ljekovito sredstvo ili krv s pločice sklizne na držač. (Sisak, 1. – 4. st., K90)
~ Fig. 39 Detail of a spatula with ring moulding on the transition between the handle and the recipient. Some authors claim such ornaments had a function, e.g. preventing a remedy or blood seeping from the recipient onto the handle. (Sisak, 1st – 4th c., K90)

When Galen was 16, Asclepius, the god of medicine, visited his father in a dream, which made him steer Galen towards medicine. Galen began his studies in the temple of Asclepius in Pergamum. After his father's death (c. 149 or 150 CE), Galen travelled the Mediterranean and studied medicine at Smyrna and in Corinth. His teachers mostly followed the Hippocratic tradition. His visit to Alexandria had a big influence on his education. There, Galen had an opportunity to study anatomy.[233] In 157, he returned to Pergamum and accepted the position of physician in a gladiator school where he spent the next four years. During this period, he had an opportunity to practice all that he had learned. He expanded his knowledge of anatomy, particularly the knowledge of fractures and severe traumas. He also noted the importance of diet, exercise and hygiene in the prevention of disease.[234]

In 162, Galen came to Rome where he spent the rest of his life. In order to attract Roman patients, and potential clients, Galen publicly demonstrated his knowledge of medicine and philosophy and clashed with rivals and opponents. He became known for his carefully planned public anatomical and physiological demonstrations, as well as lectures.[235]

235 Manger (2005: 122)
236 Garcia-Ballester (2002: 1663)
237 McNeill (1976: 95); McLynn (2009: 417, 419, 424)
238 Corpus Medicorum Graecorum (1908: 5, 8, 1, 118–121, 130–135); Nutton (2004: 225)
239 Eichholz (1951: 60–71)
240 Swain (1996: 430–432); Boudon-Millot (2007: LXXVII–LXXX)
241 Lloyd (1991: 398–416)
242 Manger (2005: 128)
243 Nutton (2004: 230)

jući životinje (većinom primate) i proučavajući tijela pokojnika koja su igrom slučaja bila izložena pogledu javnosti.[244]

Mnoga njegova anatomska opažanja vrijede i danas, osobito njegovi opisi kostura, mišića i živčanog sustava. Pogreške pri opisu građe srca, pluća i kardiovaskularnog sustava mogu se pripisati činjenici da je svoja anatomska istraživanja obavljao prvenstveno na životinjama.[245] Mnoge njegove rasprave bave se anatomijom i fiziologijom, a napisao je i priručnik o seciranju *O anatomskim procesima* (lat. *De anatomicis administrandibus*).

Galenova anatomija ne samo da je prevladala do kraja antike nego je bila i jedina prihvaćena tijekom srednjeg vijeka, sve do epohalnog rada Andreasa Vesaliusa početkom 16. st. Poznavanje anatomije napravilo je od Galena vrsnog kirurga. Izvodio je zahvate na mozgu, operacije na oku, a puštanje krvi oboljelima bilo mu je jedan od omiljenih načina liječenja.[246]

Smatrao je da sekcija potvrđuje Platonovu trodijelnu podjelu ljudskog organizma.[247] Centre tijela smješta u mozak, srce i pluća te su zajedno odgovorni za opće zdravlje organizma. Racionalni dio smješten je u mozgu, koji kontrolira više kognitivne sposobnosti, te je odgovoran za procese poput zaključivanja, promišljanja i pamćenja. Srce je centar odgovoran za osjećajni dio te se u njemu nalazi naša volja za razvojem i životom. U jetri se nalazi naš apetitivni sustav koji kontrolira naše fiziološke potrebe putem kolanja krvi diljem tijela. Da bi opisao način na koji svaki od centara upravlja organima koji su mu dodijeljeni, ali i način na koji međusobno surađuju, prihvatio je teoriju pneume koja cirkulira tijelom.

Za Galena nema razlike između spiritualnog i tjelesnog u organizmu.[248] U svom radu bavio se i psihičkim bolestima. Sve tjelesne, ali i sve psihičke bolesti, imaju uzrok u neravnoteži tjelesnih tekućina i na taj način ih treba liječiti. Ljudi posjeduju urođenu predodređenost prema određenoj tekućini koja se oslikava u crtama karaktera, tj. temperamentu. Galen razlikuje devet različitih temperamenata, jedan, koji je ravnoteža četiri tekućine, i ostale koji pokazuju dominiranje jedne ili više tekućine. Temperament također određuje kojim bolestima će pojedinac biti izloženiji.[249]

Osnova Galenovog praktičnog pristupa liječenju je, kao i kod Hipokrata, postavljanje odgovarajuće prognoze. Temelj svake prognoze mora biti detaljno promatranje pacijenta i dijagnoza, ali liječnik pri postavljanju prognoze mora u obzir uzeti dob i navike oboljelog te izvanjske faktore koji mogu utjecati na tijek bolesti.[250] Galenova je prognoza vrlo individualna, iako on priznaje da određeni simptomi odgovaraju određenim bolestima.

Kao i prognoza, Galenova terapija je individualna, a sastoji se od umjerene prehrane, odmora, spavanja. Galen preporučuje fizičku aktivnost, ali vrlo umjereno. O ljekovitim svojstvima kupki bio je vrlo štur. Zanimljivo je da je svojim pacijentima branio konzumiranje svježeg voća jer je smatrao da uzrokuje čitav niz bolesti. Ako ovakav blagi pristup nije pomagao, Galen je prepisivao lijekove i napitke.

One of his first clients was the famous philosopher Eudemus whom Galen successfully cured of malaria. Although his rivals criticized his approach that emphasized prognosis, Eudemus was grateful enough to recommend him to his friends.[236]

Galen's rise was marked by the outbreak of a plague during the reign of Marcus Aurelius called the Antonine plague.[237] In 169, after the death of Lucius Verus, co-ruler of Marcus Aurelius, Galen became the personal physician of the imperial heir, the future emperor Commodus, the position he held for most of Commodus' life.[238] During this period Galen devoted his time to writing his opus.

The last decades of Galen's life are less known. He was one of the physicians at the court of Septimius Severus, and possibly a personal physician to young emperor Caracalla.[239] The exact year of his death is also not known, and different authors place it between 199 and 217.[240]

Sl. 40. Spatule s listolikim proširenjima na jednom i maslinastim završetcima na drugom kraju držača, koji može biti ukrašen i neukrašen. (Sisak, 1. – 4. st., K91 – 93)
~ Fig. 40 Spatulas with leaf-shaped recipients and olivary ends, with a handle that can be decorated or undecorated. (Sisak, 1st – 4th c., K 91 – 93)

Sl. 41. Spatule kojima listoliki recipijent ima i rombično proširenje. Drugi kraj im nije sačuvan, a mogao je biti zašiljen ili s maslinastim proširenjem. (Sisak, 1. – 4. st., K94 – 95)
~ Fig. 41 Spatulas with leaf-shaped recipients and rhomboid extensions on one side, while the other, which is not preserved, can be pointed or have and olivary end. (Sisak, 1st – 4th c., K94 – 95)

244 Hankinson (1991: 197–233); Lloyd (2007:135–146)
245 Singer (1956:51,71–76)
246 Manger (2005: 129)
247 Galen. On the Opinions of Hippocrates and Plato. 5, 211–805; Gill (2007: 88–120); Lloyd (2007: 135–146)
248 Hankinson (1991: 197–233)
249 Galen. On My Own Opinions. 5, 1–7; Singer (1997: 198–220)
250 Nutton (2004: 239)

Odnos liječnik – pacijent vrlo je važan Galenu, iako ne iz istih razloga koje navodi Hipokrat. Za razliku od Hipokratova učenja, koje naglašava međusobno povjerenje koje moraju izgraditi oba sudionika, Galen smatra da u tom odnosu liječnik mora biti dominantan. Jedan od načina postizanja takve dominacije je i razgovor s pacijentom, koji kod oboljelog treba pobuditi osjećaj divljenja prema liječniku i osigurati njegovu poslušnost.[251]

GALENOV KORPUS

Stvarni opseg Galenovih dijela nemoguće je utvrditi, a njihova popularnost trajala je stoljećima.[252] Galenova se djela u podjednakoj mjeri bave medicinom i filozofijom. U njima Galen pokriva gotovo svaki aspekt medicinske teorije i prakse poznat u antici, kao i vlastita otkrića na području anatomije, fiziologije, dijetetike i terapeutike, psihologije i psihijatrije, očuvanja zdravlja, a autor je i djela koja se bave njegovim prethodnicima, medicinskim školama, logikom i filozofijom.[253]

Sagledati Galenov opus u cjelini vrlo je zahtjevan posao, dodatno zakompliciran brojnim intervencijama u njegov rad u kasnijim razdobljima. Najcjelovitiji je prikaz još uvijek onaj Karla Gottlaba Khuna, njemačkog fizijatra i povjesničara medicine, sastavljen u prvoj polovini 19. st. Njegova sistematizacija Galenovih djela broji 122 rasprave prevedene s grčkog na latinski jezik i organizirane u 22 knjige.[254]

Galenov opus, uz njegove dvije bibliografije, moguće je tematski podijeliti u nekoliko cjelina. Najčešće se dijeli na: uvodne rasprave ili prologomenu (*O različitim medicinskim školama*, lat. *De Sectis*), fiziološke i anatomske rasprave (*O kostima*, lat. *De Ossibus*), rasprave o higijeni (*O očuvanju zdravlja*, lat. *De Sanitate Tuenda*), etimološke rasprave (*O uzrocima i simptomim*a, lat. *De Symptomatum Causis*), semiotičke rasprave (*O zahvaćenim dijelovima tijela*, lat. *De Locis Affectis*), farmakološke rasprave (*O protuotrovima*, lat. *De Antidotis*), rasprave o kliničkoj praksi (*O venesekciji, protivno Erasistratu*, lat. *De Venæsectione, Adversus Erasistratum*), terapeutske rasprave (*O metodi liječenja bolesti*, lat. *De Medendi Method*o) te komentare (Komentar Hipokratovih aforizama, lat. *In Aphorismos Hippoc.*) Osim rasprava koje je John Redman Coxe uključio u svoju podjelu, postoje fragmenti rasprava te djela koja ne pripadaju ni jednoj tematskoj cjelini.[255]

GALEN'S MEDICINE

The influence that Galen's education had on his understanding and practice of medicine was immense. His teachers all accepted Hippocrates so his teachings shaped Galen's doctrine. But Galen's fascination with Hippocrates went a step further and Galen began to identify himself with the "Father of medicine". Over time, Galen began to shape Hippocrates in his own image, through his works and through his commentaries on Hippocrates.[241]

According to Galen, nutrients, substances that we take into their bodies become bodily fluids. Characteristics of individual nutrients cause the increase in the bodily fluid that they produce. Nutrients that have hot properties create an excess of bile which also has hot properties, while cold nutrients were responsible for an excess of phlegm.[242] The intake of certain nutrients was blamed for the appearance of a disease with specific properties. The cause of the disease was always natural, and the responsibility of physicians was to explain the cause and course of the disease with natural processes.

Another aspect of Galen's medicine that developed under the influence of Hippocrates was his focus on anatomy and physiology. Galen believed that a good physician needed to acquire knowledge of the internal structure of the human body and its internal processes.[243] Galen emphasizes the practical approach to anatomy in which dissection had a crucial role. Since in the 2nd century, a dissection of human bodies was banned throughout the Empire, Galen studied anatomy by dissecting animals (mostly primates) and studying the body of the deceased who had been accidentally shown to the public.[244]

Many of his anatomical observations are still valid today, especially his description of the skeleton, muscles and nervous system. Errors in his description of the heart, lungs and cardiovascular system can be attributed to the fact that Galen performed his anatomical studies primarily on animals.[245]

Many of his discussions deal with the anatomy and physiology, and he also wrote a manual on the anatomical dissection *On anatomical Procedures (De anatomicis administrandibus).*

Galen's anatomy was used until the end of antiquity, and was also the only accepted anatomy during the Middle Ages, until the epochal work of Andreas Vesalius in the early 16th century. Knowledge of anatomy made Galen a skilled surgeon. He performed surgeries on the brain and eye, while bloodletting was one of his favourite therapeutic procedures.[246]

Galen believed that dissection confirmed Plato's tripartite division of the human body. He placed the three centres in the brain, heart and lungs.[247] Together, they are responsible for the overall health of the organism. The rational part is located in the brain which controls higher cognitive abilities and is responsible for processes such as reasoning, thinking and memory. The heart is the centre responsible for emotions and contains our will for personal development. The liver represents our appetitive system that controls our physiological needs through circulation of blood in the body. In order to describe how each of the centres controlled the organs assigned to them, as well as worked together, he adopted the theory of pneuma that circulates through the body.

Galen did not differentiate between the spiritual and physical.[248] In his long career he also dealt with mental illnesses. For him, all physical and mental conditions were caused by an imbalance in humours and should be treated as such. People had an innate predisposition to a particular humour which was reflected in their character traits, i.e. temperament. Galen distinguished between nine different temperaments, one that was a balance of four humours and others that showed the dominance of one or more humours. Temperament also determined which disease a person was susceptible to.[249]

The basis of Galen's practical approach to treatment was, as with Hippocrates, estab-

251 Petridou,Thumiger (2016: 90) Kotrci Walters (1979: 256–304); Singer (1997: 3); Nutton (London 2004: 390, f.22)

252 Mišljenja o točnoj količini materijala koji je reproducirao Galen razlikuju se od autor do autora. Vivian Nutton tako navodi da Galenov korpus čini tek desetinu svih sačuvanih djela napisanih na grčkom jeziku do 350.
~ Opinions about the exact amount of text that Galen wrote vary significantly. Vivian Nutton states that the Galenic Corpus makes only a tenth of all the surviving works written in the Greek language up to 350 CE.

253 Manger (2005: 129); Brain (2009: 2)

254 Kotrc, Walters (1979: 256–304)

255 Preuzeta je tematska podjela koju je 1846. predstavio John Redman Coxe, američki liječnik i prevoditelj, inače jedan od pionira cijepljenja protiv zaraznih bolesti.
~ As introduced in 1846 by John Redman Coxe, one of the pioneers of vaccination against infectious diseases.

Sl. 42. Spatule koje završavaju trokutastim proširenjem na jednom, te zašiljenim vrhom na drugom kraju. Trokutasto proširenje može biti konkavno oblikovano. (Sisak, 1. – 4. st., K98 – 101)
~ Fig. 42 Spatulas with triangular recipients, and pointed endings. The triangular recipient can be concave. (Sisak, 1st – 4th c., K98 – 101)

Sl. 43. Spatule s trokutastim proširenjem mogu imati i ravno oblikovano proširenje. (Sisak, 1. – 4. st., K96 – 97)
~ Fig. 43 Spatulas can also have a flat triangular recipient. (Sisak, 1st – 4th c., K96 – 97)

GALEN I COPYRIGHT

Galen je vjerojatno najproduktivniji pisac antike. Prema nekim autorima njegov opus količinom predstavlja polovicu svih djela napisanih na grčkom jeziku u antici.[256] Stvarni opseg nemoguće je odrediti jer sam Galen navodi podatak da je dio njegovih knjiga uništen u požaru koji je zahvatio hram Mira u Rimu 192. godine.

Popularnost Galenovih rasprava bila je golema već u antici. Još za vrijeme Galenova života pojavili su se brojni plagijati i zloupotrebe njegovih djela pa je sam Galen sastavio dvije bibliografije, tj. vodiča kroz svoj opus *O mojim vlastitim djelima* i *O redoslijedu mojih djela*. Kroz srednji vijek i renesansu također se pojavljuju različiti plagijati te se jedna te ista rasprava često javlja pod nekoliko različitih naziva.

lishing an appropriate prognosis. Every prognosis must be based on a detailed observation and diagnosis, but a physician should also consider the age and habits of a patient, as well as external factors that might influence the course of disease.[250] Galen gave individual prognosis, even though he admitted that certain symptoms were connected to particular diseases.

As his prognosis, Galen therapy was individual, and consisted of a moderate diet, rest and sleep. Galen also recommended moderate physical activity. He did not say a lot on the medicinal properties of bathing. He did not allow his patients to eat fresh fruit because he believed it caused several diseases. If this mild treatment was not helping, Galen would prescribe herbal remedies and potions.

Physician-patient relationship was very important to Galen, although not for the same reasons cited by Hippocrates. Unlike Hippocrates, who believed that trust must be established, Galen believed the physician had to be the dominant person. One way of achieving such dominance was talking to a patient in a way that evoked a sense of admiration for the physician and ensured the patient's obedience.[251]

GALENIC CORPUS

The actual extent of Galen's written work is impossible to determine, but its popularity has lasted for centuries.[252] Galen equally dealt with medicine and philosophy. In his written works, Galen covered almost every aspect of medical theory and practice known in ancient times, as well as his own discoveries in the fields of anatomy, physiology, dietetics and therapeutics, psychology and psychiatry, and healthcare. His works also mention his predecessors, medical sects, logic and philosophy.[253]

Analysing Galen's written works is a very demanding task further complicated by numerous interventions done in later periods. The most complete review of Galen's work was made in the first half of the 19th century by Gottlab Karl Kuhn, a German physician and historian of medicine. His systematization of Galen's works consists of 122 treatises translated from Greek into Latin in 22 volumes.[254]

Galenic corpus, along with his two bibliographies, is thematically divided into several units. It consists of: introductory treatises or prolegomena (*On different medical schools, De Sectis*), physiological and anatomical treatises *(On bones, De Ossibus*), treatises on hygiene (*On the preservation of health, De Sanitate tuenda*), etymological treatises (*On the causes of symptoms, De Symptomatum Causis*), semiotic treatises (*On affected parts, De Locis Affectis*), pharmacology treatises (*On antidotes, De Antidotis*), treatises on clinical practice (*On venesection versus Erasistratu, De Venæsectione adversus Erasistratum*), therapeutic treatises (*Of the method of curing disease, De methodi medendo*) and commentaries (*Commentary on Hippocrates' Aphorisms, In Aphorismos Hippoc.*) Aside from treatises that John Redman Coxe, an American physician and translator, included in his classification, there are fragments of discussions and treatises that do not belong under any thematic unit.[255]

GALEN AND COPYRIGHT

Galen was probably the most productive writer in antiquity.[256] According to some authors, his work represents half of all the works written in ancient Greek. The actual extent of Galen's literary input is impossible to determine because, as Galen said himself, some of his books were destroyed in a fire that destroyed the Temple of Peace in Rome in 192.

Galen's treatises were popular even in antiquity. During Galen's life, many forgeries and misuse of his works appeared, so Galen compiled two bibliographies, or guides through his own work, *On My Own Books* and *On the Order of My Own Books*. During the Middle Ages and Renaissance, different forgeries also appeared and the same treatise often appeared under several different names.

256 Kotrc, Walters (1979: 256–304); Singer (1997: 3); Nutton (London 2004: 390, f.22)

MEDICINA U KASNOJ ANTICI
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MEDICINE IN LATE ANTIQUITY

Sjenu koju Galenov lik i djelo bacaju na prakticiranje medicine u razdoblju kasnog Carstva, nemoguće je precijeniti. Period od gotova dva stoljeća nakon Galenove smrti kao da ne postoji u povijesti medicine. Originalna su djela izuzetno rijetka, autori često nepoznati ili ih kasnija tradicija krivo pripisuje Galenu.[257] Općenito, broj povijesnih izvora i literarnih djela od sredine 3. st. opada, izuzev ranih kršćanskih autora. Ono što se događa u svijetu antičke medicine zapravo je samo preslika širih zbivanja koja polako ruše stabilnost Rimskog Carstva.

Od 3. st. politička i kulturna slika Carstva nepovratno se mijenja. Brojne invazije barbarskih plemena i konstantni građanski ratovi doslovce paraliziraju Carstvo što na kraju dovodi do njegove podjele na Zapadno i Istočno Carstvo te preseljenja prijestolnice iz Rima u Konstantinopol. Promjene koje se događaju u društvu samo su reakcija na opću nestabilnost koja vlada. Do druge polovine 4. st., kad se sporadično pojavljuju izvori vezani uz povijest medicine, situacija je drastično drugačija nego u trenutku Galenove smrti.

Živa medicinska rasprava i medicinski pluralizam ranijih razdoblja polako prerasta u monolitni sustav kojim vlada jedna jedina doktrina – galenizam.[258] Do sredine 7. st. galenizam postaje prevladavajući medicinski nauk. Trodijelna podjela organizma na tri sustava kojima ravnaju mozak, srce i jetra, a pod utjecajem su tjelesnih tekućina, postaje osnovica medicinskog učenja. Anatomska istraživanja u potpunosti se odbacuju kao nemoralna i protubožanska, a praznovjerje i magični elementi prodiru u tkivo svih znanosti, pa tako i u medicinu.

Iako se Hipokrat i dalje priznaje kao vodeći autoritet za medicinu, Hipokratov liječnik kojeg vode racionalnost i logika, zapravo postaje ugrožena vrsta u svijetu kojim dominira nova religija.[259] Hipokratova tradicija, koja se zasniva na ljubavi prema umijeću, intelektualnoj radoznalosti i slavljenju zdravlja, strana je kršćanskoj doktrini. Rani kršćanski mislioci, poput Tertulijana, objašnjavali su epidemije, glad, rat i bolest kao izraz božje volje.[260] Medicina, kao i ostale svjetovne znanosti, postaje manje bitna i podređena teologiji.

U samoj medicini dolazi do jasne podjele između teorije i prakse. Taj je proces započeo već krajem 2. st., a do 5. st. dominira svim medicinski priručnicima.[261]

Sl. 44. Koštane spatule koje nemaju proširenje, već urezano udubljenje različitog oblika na jednom kraju, dok im je drugi kraj zašiljen. (Sisak, 1. – 4. st., K102 – 108)
~ Fig. 44 Bone spatulas without a recipient. They have a notch, that can vary in shape, on one side, and a pointed ending on the other. (Sisak, 1st – 4th c., K102 –108)

It is impossible to overestimate just how much the practice of medicine was overshadowed by Galen and his work during the Late Empire. It almost seems that the period of over two centuries after Galen's death does not exist in the history of medicine. Original works were extremely rare, authors were often unknown or later tradition incorrectly attributed them to Galen.[257] In general, the number of historical sources and literary works declines in the mid 3rd century. The exception were early Christian authors. What was happening in the world of ancient medicine was actually only an echo of larger events that were slowly annihilating the stability of the Roman Empire.

From the third century, political and cultural image of the Empire was irreversibly starting to change. Frequent barbaric invasions and constant civil wars paralyzed the Empire. This eventually led to the division into Western and Eastern Roman Empire, and relocation of the capital from Rome to Constantinople. Changes taking place in society were just a reaction to general instability. By the second half of the 4th century, when sources for the history of medicine start emerging, the situation was drastically different than at the time of Galen's death.

Vivacious medical discussions and pluralism of earlier periods was gradually becoming a monolithic system governed by a single doctrine — Galenism.[258] By the mid-7th century, Galenism became a prevailing medical doctrine. Tripartite division of the organism in three systems which governed the brain, heart and liver, and were influenced by bodily humours, became the basis of medical learning. Anatomical studies were completely dismissed as immoral and against God, and superstition and magical

257 Nutton (2004: 293)
258 Nutton (2004: 292)
259 Temkin (1991: 231–235)
260 Tertulijan (lat. Quintus Septimius Florens Tertullianus, c. 155. – 240. g. pr. Kr.), rimski ranokršćanski pisac, rodom iz Kartage. Autor je 31 sačuvanog djela.
~ Tertullian (Quintus Septimius Florens Tertullianus, c. 155 – 240 CE) early Christian writer, a native of Carthage. He is the author of 31 surviving works.
Manger (2005: 136)
261 Cunningham (1986: 303–24)

Treba navesti da je rano kršćanstvo blagonaklono gledalo na medicinu. Ono što nije dolazilo u direktan sukob s kršćanskim doktrinama, poput administriranja ljekovitih pripravaka i dijetetike, uklopljeno je u novi sustav vjerovanja. Tradicionalna svetišta-liječilišta nešto su posve drugo. Prvi kršćanski carevi dozvoljavali su štovanje starih lječilišnih kultova još u 4. st., pogotovo u ruralnim sredinama. Ali postupno, u velikim urbanim središtima, hramove posvećene Asklepiju i Apolonu zamjenjuju kršćanske crkve.[262]

Paralelno s nestankom starih božanstava razvija se kult svetaca povezanih s čudotvornim izlječenjima. Do kraja 4. st. priče o čudotvornim izlječenjima bolesnika koja su povezana s relikvijama, postaju vrlo česte. Takva svjedočanstva zapravo naglašavaju nemoć svjetovnih liječnika pred bolešću jer su i bolest i izlječenje zapravo volja božja.[263]

Ono čemu je uspon kršćanstva izravno pridonio, pojava je prvih pravih bolnica. U bolnicama se konkretizirala kršćanska dužnost brige za bolesne i nemoćne. Prve bolnice javljaju se na prostoru Istočnog Carstva tijekom 4. st. Iako povijesni izvori koriste različite nazive za prve bolnice (grč. xenodokeia, xenones, ptochotropheion, nosokomeia), namjena im je vrlo slična, briga za bolesne, nemoćne, siromašne, ali i strance. Prva takva institucija u Rimu javlja se 397. godine.[264] U 5. st. bolnice postaju uobičajene, osobito u Istočnom Carstvu, te se javljaju i određene specijalizacije među njima. Pojavljuju se bolnice za žene, dok bolnice velikih gradova poput Konstantinopola i Antiohije, imaju odvojene muške i ženske odjele.[265]

Sl. 45. Dvije spatule u obliku lancete, od kojih manja ima piramidalno, a veća pločasto proširenje na jednom kraju, dok im suprotni kraj nije sačuvan. (Sisak, 1. – 4. st., K109 – 110)
~ Fig. 45 Two lancet-shaped spatulas, the smaller one has a pyramidal recipient, and the larger a flat recipient. Opposite ends of both spatulas are not preserved (Sisak, 1st – 4th c., K109 – 110)

elements penetrated science and medicine. Although Hippocrates was still recognized as the leading authority in medicine, the Hippocratic physician led by reason and logic actually became an endangered species in the world dominated by the new religion.[259] The Hippocratic tradition that was based on the respect of skill, intellectual curiosity and celebration of health, was unknown in Christian doctrines. Early Christian thinkers such as Tertullian explained epidemics, famine, war and disease as an expression of God's will.[260] Medicine and other secular sciences became less important and subservient to theology.

Trends in medicine led to a clear division between theory and practice. This process began in late 2nd century, and it dominated all medical textbooks from the 5th century.[261]

Early Christianity saw medicine as benevolent. Everything did not come into direct conflict with Christian doctrines, for example administration of herbal remedies and dietetics, was incorporated into the new belief system. Traditional healing sanctuaries were another story. First Christian emperors allowed the worship of ancient healing cults in the 4th century, especially in rural areas. But, in large urban centres, temples dedicated to Asclepius and Apollo were gradually replaced with Christian churches.[262]

At the same time as the old deities were disappearing, cult of saints associated with miraculous abilities to cure started to develop. By the end of the 4th century, stories about patients who were miraculously cured with relics became common. Such testimonies actually emphasized the impotence of secular physicians against illness, because disease and its cure were both God's will.[263]

The rise of Christianity directly contributed to the emergence of first real hospitals. It was in hospitals, that Christian duty of caring for the sick and infirmed evolved. First hospitals appeared in the Eastern part of the Empire during the 4th century. Although historical sources use different names for the first hospitals (*xenodokeia, xenones, ptochotropheion, nosokomeio*) their purpose was very similar, caring for the sick, weak, poor and foreigners. First such institution appeared in Rome in 397.[264] In the 5th century, hospitals were quite common, especially in the Eastern Empire, and certain specialization appeared among them. Hospitals for women started to appear, while hospitals in major cities, such as Constantinople and Antioch, had separate wards for men and women.[265]

262 Asklepijev hram u Aegini je srušen 331.g. Serapeion u Aleksandriji, utočište starog paganizma uništen je 391.g. Do kraja 4.st. velike Asklepijeve hramove u Epidauru i u Pergamu zamijenile su kršćanske crkve.
~ Temple of Asclepius in Aegina was demolished in 331 CE. Serapeion in Alexandria, a sanctuary of ancient paganism was destroyed in 391 CE. By the end of the 4th century, great temples of Asclepius in Epidaurus and in Pergamum were replaced by Christian churches.

263 Mitchell (1993: 134–150)

264 Sveti Jeronim (lat. Eusebius Sophronius Hieronymus, c. 347. – 420. g. po. Kr.), kršćanski svetac, svećenik, ispovjednik, teolog i povjesničar. Poznat je po svom učenju o kršćanskom moralu. Autor je impresivnog opusa koji obuhvaća prijevode i komentare ranokršćanskih autora, povijesna djela, opise života svetaca, itd.
~ Saint Jerome (Eusebius Sophronius Hieronymus, c. 347 – 420 CE), Christian saint, priest, confessor, theologian and historian. Known for his teaching on Christian morality. Author of the impressive collection of works, which include translations and comments on early Christian authors, historical works, hagiography, etc.
Jerome. Letters. 77, 66.

265 Prokopije (lat. Procopius Caesariensis, c. 500. – 554. g. po. Kr.), kasnoantički učenjak i znanstvenik, vodeći bizantski povjesničar 6. st. Autor je povijesnih djela O ratovima (Ἱστορίαι ili Ὑπὲρ τῶν πολέμων λόγοι), Tajne povijesti (grč. Ἀνέκδοτα, lat. *Historia Arcana*) te O građevinama Justinijanovim (grč. Περὶ κτισμάτων, lat. *De aedeficiis*).
~ Procopius (Procopius Caesariensis, c. 500 –554 CE) late antique scholar and scientist, the leading Byzantine historian of the 6th century. He wrote historical works Wars (Ιστορίαι or Ὑπὲρ τῶν πολέμων λόγοι), Secret History (Ἀνέκδοτα, Historia Arcana) and Buildings of Iustinian (Περὶ κτισμάτων, De aedeficiis). Procopius. Buildings. 2, 10; Dols (1987: 372)

POLOŽAJ LIJEČNIKA U ANTICI
~
THE SOCIAL POSITION OF PHYSICIAN IN ANTIQUITY

Koliko se cijeni iskustvo dobrog liječnika, moguće je vidjeti već u Homerovim epovima. U *Ilijadi* je položaj liječnika definiran iznad onog običnog čovjeka, no položaj liječnika u staroj Grčkoj nije bio definiran nikakvim zakonima.[266] Nije postojao pravni okvir koji bi određivao tko se smije, a tko ne smije baviti medicinom.[267]

O tome kako je klasično grčko društvo percipiralo liječnike, najbolje se vidi iz različitih rasprava Hipokratovog korpusa. Medicina se smatrala vještinom, umijećem (grč. τέχνη) i kao takva je bila izjednačena s ostalim obrtima. Liječnik je zapravo bio poslovni čovjek, obrtnik, po položaju sličan trgovcu i prema tome nije bio visokog društvenog statusa.[268] O položaju liječnika u vrijeme klasičnog razdoblja svjedoči sama Zakletva. Kako je ranije spomenuto, prvi dio zakletve određuje prava i obveze liječnika-naučnika prema svom učitelju. Zakletva zapravo potvrđuje da se medicina podučavala kao i svaka druga vještina, pri čemu majstor podučava naučnika i prenosi znanje na sljedeću generaciju.

Liječnik je mogao putovati od mjesta do mjesta, nudeći svoje usluge ili je mogao otvoriti stalnu praksu u gradu. Kako bi uspio u svom poslu, morao je dokazati da je sposoban i učen, te da posjeduje znanja i vještine koje ga razlikuju od konkurencije. Pacijent je bio taj koji je prosuđivao liječnikove kvalitete kao što bi procijenio bilo kojeg obrtnika. Mnoge rasprave iz Korpusa bave se ophođenjem liječnika prema pacijentu, njegovim nastupom, načinom izražavanja te izgledom ordinacije. Liječnik također mora biti svjestan svojih ograničenja, kako nije u mogućnosti povratiti zdravlje svima, mora pomno birati slučajeve koje će preuzeti kako ne bi naškodio vlastitoj reputaciji.[269]

S obzirom da je liječnik obrtnik koji nudi određene usluge, on za njih ima pravo tražiti naplatu. Kod određivanja cijene svojih usluga, liječnik mora imati na umu financijsko stanje svojega klijenta te ne smije precijeniti svoje usluge. Mora imati na umu da bi briga oko cijene usluge mogle samo pogoršati pacijentovo stanje. Iznimka od pravila su neka vrsta državnih liječnika koji su pratili vojsku ili mornaricu i bili u unajmljeni od strane države. Herodot čak

Sl. 46. Listolike sonde na jednom kraju završavaju sličnim maslinastim proširenjem, ali su im zato držači mogli biti različito ukrašeni. (Sisak, 1. – 4. st.)
~ Fig. 46 Spoon probes with an olivary end on one side, but their handles could have various ornaments. (Sisak, 1st – 4th c.)

THE SOCIAL POSITION OF PHYSICIAN IN ANTIQUITY

How much was a good physician valued can be seen even in Homer's epics. In *Iliad* physician is praised above common man, but the position of physicians in ancient Greece was not defined by any law.[266] There was no legal framework that determined who could and who could not practice medicine.[267]

How Greek society during Classical period saw physicians can best be understood from various works in Hippocratic corpus. Medicine was considered to be a skill (Τέχνη) and as such was equated with other crafts. Physician was actually a business man, a craftsman, similar to merchant and therefore was not of a high social status.[268] The Oath itself actually testifies to the position of the physicians. As was mentioned earlier, the first part of the Oath actually determined the rights and obligations of a future physician toward his teacher. Oath actually confirmed that the medicine was taught like any other skill, where the master taught his students and transferred his knowledge into the next generation.

Physician could travel from place to place, offering his services or could open a permanent practice in the city. In order to succeed in his work he had to prove that he was capable and well-learned and that he had knowledge and skills that distinguished him from the competition. The patient was the one who judged the quality of physician like any craftsmen. Many treatises of the Corpus talked about the conduct of physician toward patient, his performance, mode of expression, and the appearance of his office. Physician should be aware of his limitations; he was not able to restore the health of everyone, so he must carefully choose the cases that would not harm his reputation.[269]

Since physician was a craftsman who offered certain services he had a right to de-

266 Manger (2005: 92–93)
267 Nutton (2004: 249)
268 Temkin, Temkin (1967: 89)
269 Temkin, Temkin (1967: 92)

spominje da su gradovi poput Atene i Egine imali javne liječnike već u 6. st. pr. Kr. koje je postavljalo gradsko vijeće, ali je upitno jesu li se oni u potpunosti odricali naplaćivanja svojih usluga.[270] Tijekom helenističkog razdoblja diljem grčkih gradova postojao je poseban porez zvan *iatrikon*, koji su plaćali stanovnici kako bi se financirali javni liječnici.[271] U razdoblju helenizma također se rađa nova uloga liječnika, ona kraljevskog ili dvorskog liječnika, što je posebice vidljivo kod vladara ptolomejske i seleukidske dinastije.

S obzirom na to da kategorija liječnika nije bila pravno definirana, svatko se mogao baviti medicinom i zvati liječnikom. Tijekom cijele antike uz liječnike, postoji cijeli niz zanimanja povezan uz liječenje, koje danas sigurno ne bismo nazvali liječnicima. Već su se i liječnici klasične Grčke, osobito oni koji slijede Hipokratov nauk, pokušali ograditi od određenih skupina. Djela Hipokratova korpusa naglašavaju da se liječnik ne bavi bacanjem čini, pjevanjem magičnih napjeva i ne pripisuje magične pripravke, to je uloga vračeva i šamana (iako su ih Hipokratovi nasljednici radije nazivali varalicama).[272] Kako molitva božanstvima ne može odmoći, kao ni posjet lječilišnim hramovima, ulogu u ozdravljenju imaju i svećenici. U Hipokratovo vrijeme liječnici izbjegavaju agresivne pristupe liječenju te takve prepuštaju kirurzima, koje se također može smjestiti u zasebnu skupinu. Ženske su bolesti i porodništvo u početku bile rezervirane za primalje, a liječnici se tek kasnije specijaliziraju za ta područja.[273]

Jačanjem Rima pravni položaj liječnika (lat. medicus) isprva se ne mijenja. Od 2. st. pr. Kr. grčki liječnici preplavljuju Rim i s vremenom potiskuju tradicionalnu, pastoralnu medicinu. Čak ni Rimljani, skloni birokraciji, nisu zakonski odredili koga se točno smatra liječnikom.[274] Naveli su, ipak, koje su liječničke prakse ilegalne, poput davanja otrova ili izvođenja kastracije. Za Ulpiana je pak *medicus* onaj koji fizičkim metodama liječi svoje klijente.[275]

U početku su se profesionalno medicinom u Rimu bavili samo Grci i robovi jer se smatralo da je takav položaj nedostojan samog Rimljanina. Koliko su Grci prevladavali u bavljenju medicinom, najbolje svjedoči podatak da 90% svih natpisa koji spominju liječnike u 1. st. u Rimu, nosi grčka imena, a sličan je odnos i za zapadne provincije Carstva.[276] Socijalni status liječnika uvelike se razlikovao između Rima i zapadnih provincija, te helenističkog istoka.[277] U istočnim, heleniziranim provincijama liječnici su tradicionalno uživali viši društveni položaj, povezan s dugom liječničkom tradicijom tog područja.

Položaj liječnika znatno se poboljšao pred kraj Republike kada najprije Gaj Julije Cezar svim liječnicima u gradu Rimu dodjeljuje rimsko građansko pravo. To je liječnicima itekako donijelo viši društveni status i određene privilegije, a odredbu je kasnije potvrdio car August. Za vrijeme Cezarove diktature liječnici se počinju organizirati u kolegije (lat. collegia), lokalna udruženja kakva su imali i drugi obrtnici. Čak i za vrijeme političkih nesigurnosti, kada su Cezar i August zabranjivali različita udruženja, ona liječnika ostavljana su po strani kao *collegia legitimata*.[278]

Sl. 47. Listolike sonde sa maslinastim završetcima te listolikim recipijentima različitih veličina i oblika kojima su držači različito ukrašeni. (Sisak, 1. – 4. st., K155 – 162)
~ Fig. 47 Spoon probes with olivary ends and leaf-shaped recipients of various size and shape with handles that have various ornaments. (Sisak, 1st – 4th c., K155 – 162)

mand payment. In determining the cost of his services physician should keep in mind the financial condition of his client. He must bore in mind that the concern about the cost could only worsen the patient's condition. The exception to the rule were civil physicians who followed the army or navy, and were hired by the state. Herodotus even mentioned that cities such as Athens and Aegina had public physicians as early as 6th century BCE which were employed by the city council. It is not certain whether they fully renounced their costs.[270]

During the Hellenistic period, in Greek cities a special tax called *iatrikon* was paid by residents to finance public physicians.[271] Hellenistic period also gave rise to a new role for physicians, the role of royal court physician which was particularly practiced by rulers of Ptolemaic and Seleucid dynasty.

Since the position of physician was not legally defined, everyone could practice medicine and be called doctor. Throughout antiquity, beside physicians (ἴατρος) there were a number of occupations associated with healing that today we certainly do not call doctors. Even physicians in classical Greece, especially those who follow the Hippocratic doctrine attempted to distance himself from certain groups. Hippocratic Corpus emphasized that physicians were not concerned with casting spells, singing incantations and preparing magical potions, that belonged to sorcerers and shamans (although Hippocratic heirs preferred to call them quacks).[272] Since prayer to deities or visit to healing sanctuaries could only, priests had their role in healing. During the time of Hippocrates physicians avoided aggressive treatment which was left to surgeons, which can also be placed in a separate group. Obstetrics and

270 Herodot. Povijest.
271 Israelowich (2015: 13–15)
272 Temkin, Temkin (1967: 293)
273 Retief (2006: 178)
274 U 1. st. po. Kr. liječnici se po socijalnom položaju u društvu mogu podijeliti u četiri grupe. Najniže na društvenoj ljestvici nalaze liječnici-robovi (lat. *servi medici*). Slijede liječnici-oslobođenici (lat. *liberti medici*) te liječnici-stranci, porijeklom Grci iz istočnih provincija Carstva (lat. *peregrini*). Najmalobrojniju skupinu čine domaći, rimski liječnici (lat. *medici ingenui*).
~ In the 1st century CE physicians fell into four groups according to their social class. The lowest on the social ladder were physicians-slaves (*Servi medici*). Following were physicians-freedmen (*Liberti medici*) and native Greeks from the eastern provinces of the Empire (*Peregrini*). Smallest group was comprised of local, Roman physicians (*Medici ingenui*).
Magyar (2006: 28)
275 Ulpian (lat. Gnaeus Domitius Annius Ulpianus; c. 170. – 223. g. po. Kr.), poznati rimski pravnik za vrijeme Severske dinastije.
~ Ulpian (Gnaeus Domitius Annius Ulpianus c. 170 – 223 CE), famous Roman lawyer who worked during Severan dynasty.
Nutton (2004: 249)
276 Nutton (2004: 264)
277 Israelowich (2015: 18)
278 Israelowich (2015: 24)

Zagarantirane povlastice pri oporezivanju te izuzeće od služenja vojne obveze odredbom su liječnicima dane 30-ih godina pr. Kr., a takve su povlastice potvrdili i kasniji carevi.[279] Od dinastije Flavijevaca, pa kroz cijelo 2. st. društveni status liječnika postupno se sve više izdiže te oni često vrše i važne političke funkcije.

Položajem civilnih liječnika (lat. *arhiatros*) pozabavio se car Antonin Pio kada je 140. g. odredio broj službenih liječnika izuzetih od plaćanja poreza i vršenja službene dužnosti s obzirom na veličinu grada. Poznato je da su i u Rimskom Carstvu civilne liječnike postavljali gradski vijećnici, sve dok 358. u Rimu nije osnovan Kolegij liječnika. Kroz samo tri stoljeća grčka je medicina postala sastavni dio rimske javne administracije.

Jedan od najzanimljivijih arheoloških nalaza koji nam direktno govore o položaju liječnika kroz antičko razdoblje, natpisi su na kojima se oni spominju. Najraniji natpisi datirani su još u 6. st. pr. Kr. Tematski se natpisi uvelike razlikuju, najčešće su zahvalnice koje su zajednice ili pojedinci podignuli u čast liječnika. Slijede grobni natpisi koji spominju liječnike.[280]

Naravno, sve navedeno ne znači da su liječnici bili jedini kojima su se oboljeli obraćali. Još u 1. st. ugledni Rimljani smatraju da postoje alternativne metode ozdravljenja i osobe zadužene za proces liječenja koje nisu liječnici (lat. *extra medicinae professionem cadunt*).[281] Naravno da je uloga božanstava poput Asklepija i Higieje neupitna cijelo vrijeme, a kultna mjesta liječenja ne gube na važnosti sve do kasne antike. Povezanost liječnika s Asklepijem i Higiejom, tj. Eskulapom i Salus naslijeđeno je od Grka te oni ostaju zaštitnici i pokrovitelji liječnika.[282] Kao i za vrijeme klasičnog razdoblja i helenizma oboljeli posjećuju hramove, slušaju upute svećenika i ostavljaju darove i priloge kao zavjete za ozdravljenje.

Sl. 48. Listolika sonda s poligonalno oblikovanim držačem, prstenastim ukrasom i lijepo oblikovanim listolikim recipijentom. (Sisak, 1. – 4. st., K163)
~ Fig. 48 Spoon probe with a polygonal handle, ring moulding and a fine leaf-shaped recipient (Sisak, 1st. – 4th c., K163)

Sl. 49. Detalj listolike sonde s pločastim proširenjem na prijelazu držača u recipijent na kojemu se nalaze dva ureza. Ovakvi se urezi mogu nalaziti i na prednjoj i na stražnjoj strani proširenja, a neki autori pretpostavljaju da su, osim dekorativne, mogli imati i druge funkcije. (Sisak, 1. – 4. st., K161)

~ Fig. 49 Spoon probe with a rhomboid extension with two notches on the transition between the handle and the recipient. Notches like these can be found on the posterior and the anterior side of the extension, and some authors suggest that they could have had other, non-ornamental, functions. (Sisak, 1st – 4th c., K161)

gynaecology were initially reserved for midwives. Only later male physicians specialize in these areas.[273]

With the rise of Rome the legal position of physicians (Medicus) initially did not change. From the 2nd century BCE Greek physicians came to Rome and eventually suppressed Rome's traditional, pastoral medicine. Even Romans, so prone to bureaucracy, did not legally determine the role of physician.[274] They noted however which medical practices were illegal, like giving poison or performing castration. For Roman lawyer Ulpiani Medicus was person who used physical methods to treat his clients.[275]

In the beginning professional physicians in Rome were mainly Greeks and slaves because such occupation was thought unworthy of the Roman. How much Greeks prevailed in the practice of medicine is best illustrated by the fact that 90% of all inscriptions mentioning physicians in Rome in the 1st century CE bears Greek names, and this ratio is similar for western provinces of the Empire.[276] The social status of physicians differed greatly between Rome and the western provinces and the Hellenistic East.[277] In the eastern Hellenized provinces physicians traditionally enjoyed a higher social status associated with a long medical tradition in the area.

The position of physicians significantly improved at the end of Republic when Julius Caesar granted Roman citizenship to all physicians in the city of Rome. This brought a much higher social status and certain privileges, which was later confirmed by Emperor Augustus. During Caesar's dictatorship physicians started to organize in colleges (*Collegia*), local associations that other craftsmen had as well. Even during periods of political uncertainty when Caesar and Augustus forbade various colleges, physicians' was left aside as *collegia legitimata*.[278]

Tax benefits and exemption from military service were given to physicians during 30s

279 Svetonije. Dvanaest rimskih careva.; Justinian. Digeste. 27, 1, 6, 8; Israelowich (2015: 3)

280 Nemeth (2006: 24)

281 Scribonije Larg (lat. Scrribonius Largus, c. 1. – 50. g. po. Kr.), dvorski liječnik cara Klaudija, autor liste 217 recepata pod nazivom Compositiones.
~ Scribonius Largus, c. 1 – 50 CE), court physician of Emperor Claudius, the author of the list of 217 prescriptions called Compositiones.
Extra medicinae professionem cadunt= pripadaju izvan medicinske profesije
Extra medicinae professionem cadunt= belonging outside the medical profession
Scribonius Largus.
Scribonius Largus. Compositiones. 17

282 Israelowich (2015: 46)

LIJEČNIK MUCIJE HEGETOR

U Sisku je 1875. godine pronađen nadgrobni spomenik Marcusa Muciusa Hegetora, liječnika XXXII. kohorte, koji mu je podigla njegova oslobođenica Mucia Corinthia. Riječ je o nadgrobnoj steli izrađenoj od vapnenca, visine 175 te širine 70 centimetara. Prilikom istraživanja pronađena je i urna s kremiranim ostacima pokojnika.

Natpis se nalazi između dva tordirana korintska stupa koja nose zabat s rozetom u sredini. Podno prikaza stupova spomenik je oštećen, ali se razaznaju obrisi triju predmeta koje je pokojnik kao liječnik koristio za života (možda sonde ili lancete). Naš Mucije Hegetor bio je vjerojatno grčkog podrijetla te je služio kao vojni liječnik u sastavu jedinice dobrovoljaca XXXII. kohorte što dokazuje početak natpisa.[283] Ovaj spomenik ne samo da potvrđuje boravak XXXII. kohorte u rimskoj Sisciji nego nam govori i o položaju liječnika unutar rimske vojske.

Nadgrobna stela liječnika Mucija Hegetora (inv. br. KS–346) čuva se u lapidariju Arheološkog muzeja u Zagrebu.

Sl. 50. Nadgrobna stela Marcusa Muciusa Hegetora, liječnika XXXII. kohorte, koja je boravila u rimskoj Sisciji, današnjem Sisku. Spomenik je Marcusu podigla njegova oslobođenica Mucia Corinthia. (KS–346, Sisak, 1. – 2. st.)
~ Fig. 50 Stele of Marcus Mucius Hegetor, a medical doctor to the XXXII cohort, stationed in the Roman Siscia, now Sisak. The stela was dedicated by Mucia Corinthia, a freed slave. (KS–346, Sisak, 1st – 2nd c.)

BCE and these benefits were confirmed by later emperors.[279] Starting with the Flavian dynasty and throughout the 2nd century CE social status of physicians gradually improved and they often carried out significant political functions.

Emperor Antonius Pius addressed the position of civil physicians (*Arhiatros*) in 140 CE. He determined the number of physicians exempted from taxes that carried out official duties in accordance with the size of the city. Civil physicians were elected by city councillors until 358 when College of physicians was established in Rome. In only three centuries Greek medicine became an integral part of the Roman public administration.

One of the most interesting archaeological finds that directly confirm the position of physicians during antiquity are inscriptions mentioning them. The earliest inscriptions date back to the 6th century BCE. Thematically inscriptions vary greatly; most often community or individuals erected them to honour the physician. Next in number are grave inscriptions.[280]

Of course all this does not mean that doctors were the only ones addressed by the sick. Even in the 1st century CE eminent Romans considered that there were alternative methods of healing conducted by persons who were not physicians (*Extra medicinae profession cadunt*).[281] Of course the role of healing deities such as Asclepius and Hygeia was unquestionable at all times. Roman physicians accepted the relationship with Asclepius and Hygeia, i.e. Aesculapius and Salus inherited from the Greeks, and they remained the protectors and patrons of physicians.[282] Healing sanctuaries did not lose the importance until late antiquity, patients visited temples, listened to the instructions of priests and left gifts and contributions as vows for healing.

TOMBSTONE OF PHYSICIAN MARCUS MUCIUS HEGETOR

The tombstone of Marcus Mucius Hégetor was found in Sisak in 1875, the physician in XXXII cohort erected by his freedwoman Corinthia. It is a funerary stele made from limestone, measuring 175 cm in height and 70 cm wide. During archaeological excavations an urn was found with the cremated remains of the deceased.

The inscription plate is located between two ornamented Corinthian columns carrying a pediment with a rosette in the middle. Monument is damaged at the bottom but the outlines of three items are visible that the deceased used as a physician during his life (maybe probe or lancet). Our Mucis Hegetor was probably of Greek origin and he served as a military physician of the voluntary unit of XXXII cohort, a fact proved at the beginning of the inscription.[283] This monument not only confirms that XXXII cohort spent some time in Roman Siscia but also tells us something about the position of doctors in the Roman army.

283 Brunšmid (1909: 155)

ŽENE U ANTIČKOJ MEDICINI
~
WOMEN IN ANCIENT MEDICINE

Ovo poglavlje podjednako se bavi pristupom koji su antički liječnici i filozofi imali prema ženama, kao i ulogom žena u razvoju antičke medicine.

Od samog početka razvoja antičke medicine prepoznaju se posebnosti ženske anatomije i bolesti vezane isključivo za žene. Kako se muška anatomija uzima kao norma, najčešće se na žene gleda kao na bića koja građom tijela i bolestima pokazuju niži stupanj savršenstva.

Rasprave Hipokratova korpusa bave se ženskim bolestima i problemima. Ginekološke rasprave, kako ih nazivaju, čine koheretnu skupinu djela nastalih u 5. i 4. st. pr. Kr. i njihova je posebnost da imaju dosta polemički ton.[284] Sve se slažu u činjenici da se žene razlikuju od muškaraca u dovoljnoj mjeri da njihovo liječenje zaslužuje poseban pristup, dok je uzrok bolesti kod žena isti kod svih ljudi.[285] Autori tih rasprava smatraju da su muškarci racionalniji od žena te da su žene građom svojeg tijela podložnije bolestima koje dovode do iracionalnosti.[286] Od početka se navodi glavni problem u liječenju ženskih pacijenata, a to je nevoljkost žena da svoje probleme iznesu pred liječnikom koji je muškarac.[287] Ginekološke rasprave sadrže brojne upute za liječenje ženskih problema vezanih uz menstrulani ciklus i reproduktivne organe. U skladu s posebnim pristupom ženskom tijelu, i pripravci koji se preporučuju pacijenticama, razlikuju se od onih koji se pripisuju muškima pacijentima. Vrlo često "ženski" pripravci sadrže tvari egzotičnog karaktera, koji nemaju nikakvo farmakološko djelovanje.[288]

Aristotel je smatrao da su žene nesavršene i nedovršene kopije muškaraca te da se žene i muškarci razlikuju kako fizički tako i mentalno.[289] Diokles je napisao i raspravu o ginekologiji te naglašava da su žene osjetljivije od muškaraca i da boluju od više bolesti (onih koje su svojstvene samo njima i one koje su im zajedničke s muškarcima).[290] Aleksandrijski anatomisti shvaćaju žene kao neku vrstu obrnutog muškarca, smatrajući da žene imaju reproduktivni sustav analogan muškom, koji je pohranjen u nutrini tijela.[291] Jedan je od najvažnijih antičkih autoriteta za ženske bolesti Soran iz Efeza, čija je rasprava *O ženskim bolestima* jedan od najbitnijih ginekoloških tekstova. Soran je zapravo napisao priručnik za primalje, temeljeći svoju raspravu na problemima vezanim uz trudnoću i porod.

Sl. 51. Detalj listolikih sondi, koje su dobile naziv prema recipijentu u obliku lista, koji je mogao varirati dužinom, dubinom i oblikovanjem. (Sisak, 1. – 4. st., K155 – 162)
~ Fig. 51 Detail of spoon probes with characteristic leaf-shaped recipients that varied in length, depth and form. (Sisak, 1st – 4th c., K155 – 162)

This chapter deals equally with how ancient physicians and philosophers treated women, as well as with the role women had in the development of ancient medicine.

Since the very beginnings of ancient medicine the peculiarities of the female anatomy and diseases related exclusively to women were identified. Since the male anatomy was considered to be a norm, most often women were seen as creatures whose body structure and diseases showed a lower degree of perfection.

Treatises of Hippocratic corpus dealt with women's diseases and problems. Gynaecological treatises, as they are called, make a coherent group of works created during the 5th and 4th century BCE and they take a polemical note.[284] All treatises agree that women are sufficiently unlike men so that their treatment deserves a special approach, while the causes of disease in women are the same for all people.[285] The authors believed that men were more rational than women and that female body was more prone to illnesses that lead to irrationality.[286] The reluctance of women to discuss their problems with male physicians was stressed as a major problem in treating female patients.[287] Gynaecological treatises contain numerous instructions on how to treat female problems related to the menstrual cycle and reproductive organs. In accordance with a specific female anatomy the preparations that were recommended differed from to those used on male patients. Very often "female" compositions contained substances of exotic character, which had no pharmacological effect whatsoever.[288]

284 Među ginekološke rasprave ubrajamo: *O prirodi djeteta ili Trudnoća, O ženskim bolestima, O neplodnim ženama ili O sterilnosti, O bolestima mladih žena i djevojaka, O prirodi žene.*
~ Included in gynecological treatises are: *On Nature of the Child or Pregnancy, On the Diseases of Woman, On Sterile Women or Bareness, On the Disease of Young Women or Girls, On the Nature of the Women*, etc.
Temkin, Temkin (1967: 87)

285 King (1998: 27)

286 Salisbury (2001: 142–143)

287 Manger (2005: 97)

288 Kao lijek za mnoge ženske probleme, uključujući i sterilnost, prepisivalo se laneno ulje. Kod poremećaja menstrualnog ciklusa preporučala se kozja jetra.
~ As a remedy for many women problems, including sterility, linseed oil was perscribed. For disorders of the menstrual cycle goat liver was reccomended.
Nutton (2004: 98)

289 Smith (1983: 467–478)

290 Nutton (2004: 123)

291 King (1998: 37)

Zanimljivo je da je Galen smatrao da žene, zahvaljujući menstrualnom ciklusu, imaju prirodni imunitet prema mnogim bolestima kojima podliježu muškarci. Galen je bio veliki pobornik venesekcije te je smatrao da puštanjem krvi pacijent postaje manje osjetljiv na bolest. Za njega su žene bile otporne na mnoge bolesti poput artritisa, gihta, epilepsije i melankolije upravo zbog otjecanja viška krvi.[292] Galenovi anatomski opisi uzimaju muškarca kao normu. Za njega je žena racionalno biće, ali je kapacitetima podređena muškarcu, te je slična djetetu. Njezina anatomija je "hladnija", po prirodi je slabija i podložnija bolestima, te su ženske bolesti zapravo produkt te nesavršene ženske anatomije.[293] Kroz cijelu se antiku protežu različiti komentari o tome kako su žene inferiornije od muškaraca. Aristotel je žene smjestio između robova i muškaraca. Upravo je taj stav prema ženama jedan od glavnih uzroka zašto se izrazito malo žena bavilo nekim vidom medicine za vrijeme antike. Ne smijemo zaboraviti kako žene nemaju pravo glasa i sudjelovanja u političkom životu, čime su im i mogućnosti za školovanje bitno smanjene. Stoga manji broj žena liječnica ne govori o manjku zainteresiranosti žena za medicinsku znanost, već oslikava društvenu sliku u antičko doba.

Situacija je bila nešto bolja u ranijim razdobljima u Babilonu i u Egiptu. Iako to Hamurabijev zakon izričito ne spominje (regulira samo ulogu dojilje), žene su u Mezopotamiji služile kao babice, kirurzi pa čak i dvorske liječnice.[294] Iz razdoblja drevnog Egipta poznata nam je Merit-Ptah (oko 2700. g. pr. Kr.), prva žena liječnica u povijesti medicine, a vjerojatno i prva znanstvenica čije ime znamo.[295] Mnoge su egipatske vladarice bile poznate po svom poznavanju medicine i farmakologije, posebno Mentuhetep (c. 2300. g. pr. Kr.), Hatsheput (c. 1500. g. pr. Kr.) te Kleopatra (60. – 30. g. pr. Kr.).[296] Da žene koje se bave medicinom u starom Egiptu nisu bile rijetkost, pokazuje nam i titula koju je nosila Peseshet, koja je živjela za vrijeme vladavine Četvrte dinastije (c. 2613. – 2495. g. pr. Kr.). Peseshet je bila nadglednica ženskih liječnika.[297] U Egiptu su čak postojale medicinske škole za žene, u kojima su mogle učiti ginekologiju i porodništvo. Jedna od takvih škola zasigurno je djelovala u Saisu, što potvrđuje i natpis iz Saisa. Isti natpis spominje još jednu školu koja je djelovala u Heliopolisu (dio današnjeg Kaira).[298]

Kao što smo već naveli, u najranijim izvorima, kao što su Homerova djela, spominju se liječnici, ali isključivo kao muško zvanje; žene (i to visokog podrijetla) se u aspektu medicine spominju samo u sklopu farmakopeje, kao primjerice Helena, koja je pripravila lijek prema egipatskom receptu.[299] S Hipokratovim razvojem znanstvenog pristupa medicini upoznajemo se sa "ženskim" bolestima, ali Hipokratova zakletva također kao liječnike vidi isključivo muškarce.

Prvi spomen žene u medicinskom smislu veže se uz majku filozofa Sokrata, Phainarete koja je bila primalja (grč. μαία), te će se taj pojam od klasične Grčke nadalje, vezati isključivo uz žene.[300] Platon spominje da su samo starije

Sl. 52. Listolika sonda kojoj je držač nešto kraći u odnosu na ostale primjerke.
Iako joj nedostaje drugi kraj, vidljivo je kako se prema kraju sužava. (Sisak, 1. – 4. st., K164)
~ Fig. 52 Spoon probe with a short handle. Though the other ending is missing,
the probe handle clearly tapers towards the end. (Sisak, 1st – 4th c., K164)

Aristotle believed that women were imperfect and incomplete copies of men, and that women and men differed both physically and mentally.[289] Diocles wrote a treatise on gynaecology and pointed out that women were more susceptible to illness than men and suffer from more diseases (those that are unique to them and those they share with men).[290] Alexandrian anatomists understood woman as a kind of reverse to man, believing that women had reproductive system analogous to the male that was stored inside the body.[291] One of the most ancient experts on gynaecology was Soranus whose treatise "On the women's diseases" was one of the most important gynaecological texts. Soranus actually wrote a manual for midwives, focused on issues related to pregnancy and childbirth.

It is interesting that Galen believed women to have a natural immunity to many diseases which harassed men due to their menstrual cycle. Galen was a great advocate of venesection and considered that with bleeding patient became less susceptible to disease. For him, women were resistant to many diseases such as arthritis, gout, epilepsy and melancholy because they naturally lost the excess blood.[292] Galen anatomical descriptions took man as a norm. For Galen, woman was a rational being, but in capacity subordinate to man, because she is more like a child. Female anatomy was "cooler" in nature, weaker and more vulnerable to disease, and female diseases were resulting from the imperfect female anatomy.[293]

Throughout antiquity various comments pointing to women's inferiority prevailed. Aristotle himself placed them between slaves and men. It is this attitude towards women that is one of the main reasons why so few women practiced medicine in antiquity. We must not forget that women did not have right to vote and did not participate in political life and their opportunities for schooling were significantly small. Therefore, a smaller number of female physicians can not be equated with the lack of interest in women toward medical science but reflects the social position of women in ancient times.

The situation was somewhat better in the earlier periods in Babylon and in Egypt. Although the law of Hammurabi did not explicitly mention it (it regulated only the role of wet-nurses) women in Mesopotamia served as midwives, surgeons and even court physicians.[294] Merit-Ptah (c. 2700 BCE) is known from ancient Egypt. She was the first female physician in the history of medicine, and probably the first female scientist whose name is preserved.[295] Many Egyptian queens were known for their knowledge of medicine and pharmacology, particularly Mentuhetep (c. 2300 BCE), Hatsheput (c. 1500 BCE) and Cleopatra (60 – 30 BCE).[296] That women who practice medicine in ancient Egypt were quite frequent is proved by Peseshet who lived during the reign of the Fourth Dynasty (c. 2613 – 2495 BCE). Peseshet was a "supervisor of female physicians".[297] In ancient Egypt there were even medical schools for women where they could learn obstetrics and gynaecology. One of these schools certainly existed in Sais, which was confirmed by the inscription found in Sais. The same inscription mentions another school that operated in Heliopolis (part of present-day Cairo).[298]

292 Manger (2005: 129)
293 Galen, 4, 365–6; May (1968: 733); Flemming (2000: 314–321)
294 Manger (2005: 31)
295 Klenke (2011: 192)
296 Manger (2005: 31)
297 Prioreschi (1996: 334)
298 Silverthorne, Fulgham (1997: xvii); Manger (2005: 33)
299 Homer. Odiseja. 4.229–4.230
300 Kunzl (2013: 24–25)

Sl. 53. Detalj listolike sonde na kojem je vidljivo kako je u spiralni urez brončane drške bila umetnuta žica od druge vrste materijala koja je samo mjestimično sačuvana. (Sisak, 1. – 4. st., K164)
~ Fig. 53 Detail of a spoon probe with a spiral notch in a bronze handle. The notch has a partially preserved wire inlay from some other material. (Sisak, 1st – 4th c., K164)

žene, koje su imale djecu, ali su prošle doba rađanja, služile kao primalje u Ateni u 5. st. pr. Kr.[301] Žene su zasigurno njegovale bolesne i ranjene, a kao primalje su morale raditi zajedno i s liječnicima u slučajevima (u izvorima često spominjanih) komplikacija.[302] Stoga bismo primalje mogli nazvati prvim liječnicama.

Kao prva poznata primalja i liječnica (grč. μαία και γιατρός) navodi se atenska Fanostrata (grč. Φανοστράτη) iz Acharnae, pokraj Atene, s kraja 4. st. pr. Kr., no zanimljivo je naglasiti kako joj se liječnička titula navodi u muškom rodu jer isti oblik u ženskom rodu u to vrijeme ne postoji.[303]

Cijelu situaciju najbolje ilustrira legenda o Agnodike (grč. Ἀγνοδίκη), atenskoj liječnici iz 4. st. pr. Kr., koju nam donosi već spomenuti Hyginus.[304] U vremenu nakon Hipokrata atenske su vlasti branile ženama da se bave medicinom do te mjere da je to bilo teško kriminalno djelo.[305] Agnodike su na bavljenje medicinom, navodno, potaknule patnje i smrt žena pri porodu. Kako bi izbjegla sukob s atenskim vlastima, skratila je kosu i počela nositi mušku odjeću. Otišla je u Aleksandriju gdje je učila medicinu od poznatog Herofila. Po povratku u Atenu vrlo je brzo zadobila povjerenje svojih pacijentica, koje su se mogle povjeriti ženskoj liječnici. Izazvala je zavist muških kolega koji su je optužili, još uvijek misleći da je muškarac, da zavodi svoje pacijentice. Na suđenju je Agnodike otkrila svoj pravi identitet te joj je prijetila kazna jer se kao žena nije smjela baviti medicinom. Spasile su je njezine pacijentice, a atenske vlasti su nakon vijećanja odlučile ukloniti zabranu koja je ženama branila da se bave ginekologijom i porodom.[306] Je li Agnodike stvarno postojala, nije sigurno, ali zbog ove živopisne legende, povijest medicine pamti je kao prvu ženu liječnicu u staroj Grčkoj.

S kraja helenističkog perioda potječe nadgrobni spomenik Muse iz Bizancija, kćeri Agathokla, na kojem stoji da je liječnica, pri čemu je korišten ženski oblik imena (grč. ‘ίατερινε). Radi se o nadgrobnom spomeniku manjih

Sl. 54. Listoliki recipijent unutar kojeg se nalazi reljefno izrađen pečat CARANTI. (Sisak, 1. – 4. st., K165)
~ Fig. 54 Leaf-shaped recipient with a relief workshop stamp CARANTI. (Sisak, 1st – 4th c., K165)

As was already mentioned, the earliest sources such as Homer's works mentioned physicians but exclusively as a male profession. Women (and only those of high social status) were mentioned only in connection with pharmacy, such as Helen who has produced a drug according to Egyptian recipe.[299] With Hippocrates and the development of scientific approach in medicine the notion of the "women's" disease was introduced but the Oath also saw physicians as exclusively male.

The first mention of women as a physician is related to Socrates' mother Phainarete who was a midwife (μαία). Since classical period the term midwife related only to women.[300] Plato mentioned that only older women, who had children, or passed the childbearing age, served as midwifes in Athens in the 5th century BCE.[301] Women certainly nursed the sick and wounded. As midwives they worked together with male physicians in cases of complications.[302] Therefore, we may conclude that midwifes were first female physicians.

The first documented midwife and physician (μαία και γιατρός) was Phanostrata from Acharnai near Athens (Φανοστράτη), from the late 4th century BCE. It is interesting to point out that she was addressed as physician in the masculine form because the same title did not exist in the feminine form at that time.[303]

The whole situation is best illustrated by the legend of Agnodice (Ἀγνοδίκη), Athenian physician from the 4th century BCE written down by Hyginus.[304] In the time after Hippocrates Athenian authorities prevented women from practicing medicine to the extent that it was a serious crime.[305] Agnodice was prompted to practice medicine by the suffering and death of women in childbirth. To avoid conflict with Athenian authorities she cut her hair and started dressing as a man. She went to Alexandria where her teacher was Herophilus. On her return to Athens very quickly gained trust of female patients that trusted her more that her male counterparts. She provoked the envy of male colleagues who, still thinking she was a man, accused her of seducing patients. At the trial Agnodice revealed her true identity and was threatened by a severe punishment because women were not allowed to practice medicine. Her patients saved her, and after the trial Athenian authorities decided to remove the ban defending women to deal with gynaecology and childbirth.[306] Was Agnodice real is not known, but because of the legend she is remembered as the first female physician in ancient Greece.

301 Nutton (2004: 101)
302 Kirsh (2001: 7–8)
303 Kunzl (2013: 30–31); Nemeth (2006: 24)
304 Hyginus (1960: 274)
305 Oakes (2002)
306 Yount (1999: 2)

dimenzija, na kojem je natpis osobne prirode, no sljedeći primjer spominjanja liječnice svakako govori o javnom priznanju žena u medicini 1. st. pr. Kr. Radi se o Antiohiji s Tolosa kojoj su njezini sugrađani podigli skulpturu (koja nije sačuvana) s natpisom kojim joj odaju počast za njene zasluge. Antiohija potječe iz liječničke obitelji, a njezino djelovanje prelazi granice njezine rodne Likije te ju nekoliko stoljeća kasnije spominje i Galen.[307]

Tijekom prvih razdoblja rimske medicine (*medicina domestica*) žene su zasigurno imale svoju ulogu, a s daljnjim razvojem rimske medicine pojavljuju se dokazi da žene nisu samo liječile druge žene i djecu, već da su neke imale i muške pacijente.[308] Veliki pomak za liječničko zanimanje rimskog doba Cezarova je dodjela građanskog prava svim liječnicima bez obzira na spol (*medici ultiusqe sexus*).[309] Na brojnim natpisima se žene pojavljuju kao *obstetrix* ili *medica*, te njihove grčke inačice, ali što točno stoji iza takvih naziva nije uvijek jasno.[310] Neki arheološki dokazi daju naslutiti da su žene čak prakticirale i kirurgiju.[311] Spomen liječnica i njihovih imena, kao i drugi arheološki tragovi liječnica, mogu se pratiti diljem Rimskog Carstva.[312]

O uspješnosti pojedinih žena govori nam Metilia Donata, liječnica iz današnjeg Lyona, koja je svojim novcem podigla javnu građevinu, pa je za pretpostaviti da je svojom medicinskom praksom pristojno zarađivala.[313]

Za kraj je važno spomenuti kako se žene nisu samo praktično bavile medicinom, već su neke od njih bile i autori medicinskih tekstova. Uglavnom se radi o ginekologiji i farmakologiji. Uz već navedenu Antiohiju s Tolosa, treba izdvojiti i Metrodoru, kojoj se pripisuje prvo medicinsko djelo koje je napisala žena *O ženskim bolestima i njihovom liječenju* (grč. Περὶ τῶν Γυναικείων παθῶν τῆς μήτρας).[314]

Sl. 55. Listolika sonda inv. br. A–15881 jedini je rimski medicinski instrument s pečatom u fundusu AMZ-a. (Sisak, 1. – 4. st., K165)
~ Fig. 55 Spoon probe inv. no. A–15881 is the only Roman medical instrument in the Collection with a workshop stamp. (Sisak, 1st – 4th c., K165)

On a tombstone of Muse of Bizantion, daughter of Agathokles, the feminine form for the physician (ἰατερινε) was used for the first time. It is a gravestone of smaller dimensions dating at the end of the Hellenistic period, with the inscription of a personal nature. Next mention of female physician certainly points to public recognition of women in medicine in the 1st century BCE. It belongs to Antioch of Tolos to whom citizens raised a statue (which is not preserved) with an inscription that honours her work. Antioch came from a family of physicians and was known outside the borders of her native Lykai. Few centuries later she was mentioned by Galen.[307]

During the first period in Roman medicine (*medicina domestica*) women certainly played a role. With further development of Roman medicine evidence appeared that women not only treated other women and children, but that some of them had male patients.[308] A major step forward for the medical profession in Rome was Caesar's allocation of civil rights to all physicians, regardless of gender (*medici ultiusqe sexus*).[309] Women are mentioned on numerous inscriptions as *obstetrix* or *medica*, or their Greek version, but what exactly names signify is not always clear.[310] Some archaeological evidence suggests that women even practiced the surgery.[311] Mentioning of female physicians and their names, as well as other archaeological evidence can be traced throughout the Roman Empire.[312]

Metilia Donata from present-day Lyon stands as an example of a successful female physician. She raised a public building with the money she earned practicing medicine so we may assume that her practice was quite prosperous.[313]

In the end it is important to mention that women not only practiced medicine but some of them wrote medical texts. Mostly those were works dedicated to gynaecology and pharmacology. In addition to the aforementioned Antioch of Tolos, Metroda should be pointed out. She is considered to be the author of the first medical work written by women, *On the Disease and Cures of Women* (Περὶ τῶν Γυναικείων παθῶν τῆς μήτρας).[314]

307 Kunzl (2013: 38–41)
308 Flemming (2000: 383–391)
309 Kunzl (2013: 42)
310 Nutton (2004: 196)
311 Kunzl (1995: 309–319)
312 Kunzl (2013: 66–113)
313 Furst (1997: 135)
314 Kunzl (2013: 46–47)

ZDRAVLJE CARSTVA
~
PUBLIC HEALTH IN ANCIENT ROME

Od samih početaka rimsko je društvo ulagalo velike napore u izgradnju javne infrastrukture (napose komunikacijskih puteva) što je rezultiralo razvojem civilnog inženjerstva i javne administracije, koji su bili preduvjet za inovacije poput vodovoda (akvedukti), kanalizacije, javnih kupališta (terme) i nužnika (latrine).[315] Kada se spoji birokratska uprava s inženjerskim dostignućima staroga Rima možemo govoriti o prvim javnozdravstvenim pothvatima na širokom području.[316]

Zahvaljujući širenju Hipokratovih tekstova, pogotovo rasprave *O zraku, vodi i tlu*, Rimljani su bili upoznati s utjecajem klimatskih uvjeta i okoliša na zdravlje i širenje zaraznih bolesti.[317] Na utjecaj okoliša upozorava i Vitruvije, objašnjavajući kako se izabire zdravo mjesto za podizanje grada:

"Zdravo mjesto će biti ako se mjesto nalazi na visini, nije izloženo magli ni mrazu, a otvoreno je prema nebeskim stranama koje nisu suviše ni vruće ni hladne, nego su umjerene; zatim, ako se izbjegava blizina močvare. Mjesto će biti nezdravo kad jutarnji vjetrići s izlaskom sunca dopiru do grada pa se dižu magle; s njima se onda pomiješaju otrovna isparavanja močvara u kojima žive životinjice i sve to zapahnjuje tijela stanovnika."

Veza između okoliša, klime i zdravlja očito je bila dobro poznata. Osim toga, Vitruvije piše o različitim vrstama voda, njihovim izvorima i načinima na koje se njima može upravljati.[318] Upravo je obuzdavanje i prilagođavanje okoliša velikim dijelom obilježilo razvoj rimske civilizacije, postavljajući temelje upravljanju okoliša i javnom zdravstvu.[319]

Sl. 56. Pincete različitog oblika. Osim za uljepšavanje, upotrebljavane su i u medicinske svrhe. (Sisak, 1. – 4. st., K176 – 181)
~ Fig. 56 Various tweezers were used in cosmetics, but also for medical purposes. (Sisak, 1st – 4th c., K176 – 181)

Roman society had, since its beginnings, invested a great effort in constructing public infrastructure (especially roads), which resulted in the development of civil engineering and public administration, a prerequisite for innovations like the aqueducts, sewers, public baths, and latrines.[315] When Roman administration was combined with engineering prowess, we had the first public health interventions applied on a wider area.[316]

Due to the spread of works by Hippocratic authors, especially discussions *On air, water and soil*, Romans were familiar with the impact of climate and environment on health and the spread of disease.[317] Vitruvius recognized this environmental impact when he explained how to choose a healthy place to establish a town:

"In setting out the walls of a city the choice of a healthy situation is of the first importance: it should be on high ground, neither subject to fogs nor rains; its aspects should be neither violently hot nor intensely cold, but temperate in both respects. The neighbourhood of a marshy place must be avoided; for in such a site the morning air, uniting with the fogs that rise in the neighbourhood, will reach the city with the rising sun; and these fogs and mists, charged with the exhalation of the fenny animals, will diffuse an unwholesome effluvia over the bodies of the inhabitants, and render the place pestilent." *(De architectura,* 1.4*)*

315 Robinson Olivier (1992: 96–112)
316 Porter (1999: 18–19)
317 Schneider, Lilienfeld (2008: 5)
318 Marko Vitruvije Polion (lat. Marcus Vitruvius Pollio, c. 80. – 70. do 15. g. pr. Kr.), rimski pisac, arhitekt i vojni inženjer. On je prvi poznati teoretičar arhitekture, poznat po djelu *Deset knjiga o arhitekturi* (lat. *De architectura libri decem*).
~ Marcus Vitruvius Pollio (Marcus Vitruvius Pollio, c. 80/70 – 15 BCE), Roman writer, architect and military engineer. First known theoretician of architecture, author of *Ten Books on Architecture* (*De architectura libri decem*).
Vitruvije. Deset knjiga o arhitekturi. I, 4; VIII.
319 Porter (1999: 18–22)

KANALIZACIJA, LATRINE I UPRAVLJANJE VODAMA

Etruščanski su graditelji još u 6. stoljeću pr. Kr. u gradu Rimu iskopali i izgradili kanalizaciju (*Cloaca Maxima*).[320] Primarna uloga rimske kanalizacije bila je isušivanje okolnog terena, posebno oko Foruma, da bi kasnijim proširenjima služila i za odvodnju oborinskih i otpadnih voda te ostalog otpada.[321] Iako je kanalizacija Rimu omogućila brži razvoj, zbog svojih je višestrukih funkcija predstavljala javnozdravstveni problem. Količina otpada koja se slijevala u rijeku Tiber, nije bila zanemariva, što je rezultiralo zagađenjem rijeke. Osim toga, kako bi se toliko raznovrsni otpad mogao odložiti u kanalizaciju, bilo je potrebno izgraditi velike otvore na ulicama, što je predstavljalo dodatan izvor zaraze i drugih zdravstvenih problema. No unatoč tomu, *Cloaca Maxima* iznimno je graditeljsko ostvarenje i predložak koji se kopirao u mnogim gradovima diljem Carstva.[322]

Na kanalizacijsku mrežu mogla su se spojiti samo najbogatija kućanstva i javne zgrade, poput termi. Većina građana upotrebljavala je javne latrine, za čije je korištenje bilo potrebno izdvojiti nešto novca, ili noćne posude, koje su se praznile u veće posude, kanalizaciju ili direktno na ulicu.[323] Nalazi iz Pompeja potvrđuju da su privatne latrine, kao privilegija imućnih, često bile uz ili u kuhinji zbog dostupnosti vode.[324] Javne su pak latrine u rimskim gradovima bile mjesta na kojima se nije mogla očekivati privatnost. Obično su to bile prostorije s jednom ili više drvenih ili kamenih klupa s otvorima za vršenje nužde. Bolje opremljene latrine mogle su biti ukrašene mozaicima, reljefima ili skulpturama te su ponekad imale korita za pranje ruku.[325] Većina latrina ipak nisu bile mjesta s visokim higijenskim standardima. Bila su to mjesta na kojima su ljudi dolazili u kontakt ne samo s neugodnim mirisima nego i s bakterijama, stoga i ne čudi kako je lik božice Fortune često krasio ulaze u latrine.[326]

Sl. 57. Keramičke cijevi, koristile su se u rimskoj vodovodnoj mreži. (Sisak, 1. – 4. st. K198 – 199)
~ Fig. 57 Terracotta pipes used in Roman water supply networks. (Sisak, 1st – 4th c., K198 – 199)

Sl. 58. Ostaci rimskih termi u Andautoniji, pogled iz zraka. U rasteru ulica vidljiv je otklon prema sjeveru kako bi zgrade bile zaštićene od naleta vjetra. (Ščitarjevo, 2. – 4. st., Foto: M. Vuković)
~ Fig. 58 Remains of Roman baths in Andautonia, aerial view. The street plan shows a deviation to the north, as a way of protecting buildings from the wind. (Ščitarjevo, 2nd – 4th c., Photo: M. Vuković)

The link between the environment, climate, and health was obviously. In addition, Vitruvius writes about different types of water, their sources, and ways in which they can be managed.[318] Control over the landscape and its adaptation had a great influence on Roman civilization, laying the foundation of managing the environment and public health.[319]

SEWERS, LATRINES, AND WATER MANAGEMENT

In the 6th century BCE, Etruscan builders built a sewage system in Rome (*Cloaca Maxima*).[320] Its primary function was to drain the surrounding area, especially around the Forum, but through subsequent extensions, it served to remove wastewater and other refuse.[321] Although it enabled faster development, it constituted a public health problem due to its many functions. The amount of waste flowing into the Tiber River was not insignificant, resulting in the pollution of the river. In order to dispose of so much waste, large openings in the streets had to be built, which was an additional source of infection and other health problems. Nevertheless, the *Cloaca Maxima* is an exceptional engineering achievement copied in numerous towns throughout the Roman Empire.[322]

Only the richest households and public buildings, such as baths, were able to use the sewer system. Most people used public latrines, for a fee, or bedpans that were emptied into larger containers, the sewer or directly into the street.[323] Archaeological finds from Pompeii confirm that private latrines, a privilege of the wealthy, were often in or next to a kitchen due to water availability.[324] Unlike private latrines, public latrines in Roman towns were places where you could not expect privacy. Usually, these were facilities with one or more stone or wooden benches with openings. Better equipped latrines

320 Gowers (1995: 24)
321 Bauer (1989: 43–45)
322 Hopkins (2007: 1–15)
323 Wilson (2011: 154–155)
324 Sear (2004: 162, 166)
325 Koloski-Ostrow (2015: 78)
326 Koloski-Ostrow (2015: 96); Koloski-Ostrow (2015a)

Zbog nekontroliranog odlaganja otpada i otpadnih voda, u vrijeme Republike dolazi do zagađenja rijeke Tiber, koja je dugo bila primarni izvor pitke vode za građane Rima. Iz tih se razloga 312. g. pr. Kr. u Rimu gradi prvi vodovod koji do grada dovodi pitku vodu.[327] Razvoj tehnologije vodovoda unaprijedio je i sanitarne uvjete u rimskim gradovima. Konstantnim dotokom vode iz udaljenih izvora, rimski su gradovi mogli vodom opskrbljivati javna kupališta, latrine, fontane i bogate privatne kuće. Osim toga, voda iz vodovoda upotrebljavala se i za uklanjanje otpada iz kanalizacijskih sustava, a koristila se i u poljoprivredi i gospodarstvu.[328] Vodovod je radio na jednostavnom principu, iskorištavao je silu težu. Kako bi osigurali konstantan nagib, rimski su graditelji kopali tunele, a gdje je bilo potrebno gradili su i mostove. Osim kamena i cigle za izgradnju struktura vodovoda, upotrebljavale su se keramičke i olovne cijevi kroz koje je voda tekla.[329]

Neki autori tvrde da je rimsko društvo propalo upravo zbog olovnih cijevi i kontaminacije pitke vode olovom, dok drugi ipak isključuju tu mogućnost jer je pitka voda u rimsko vrijeme sadržavala visoku koncentraciju kalcija koji se nakupljao unutar olovnih cijevi te ih je na taj način izolirao.[330] Bez obzira na moguće rizike, kao i u slučaju kanalizacije, razvoj i izgradnja vodovodne mreže imala je pozitivan utjecaj u svim sferama života.

JAVNA KUPALIŠTA

Razvoj vodovodne i kanalizacijske mreže potaknuo je i značajne napretke u organizaciji i upravljanju javnim kupalištima. U rimskom su svijetu javna kupališta bila neizostavan dio svakodnevice. Gradila su se diljem Carstva u različitom opsegu – veći kupališni kompleksi nazivali su se *thermae*, dok su manja i privatna kupališta nosila naziv *balneae* – i bila su otvorena za sve.[331] Svaki veći rimski grad imao je barem jedno kupalište, a principe njihova građenja opisao je Vitruvije.[332] Javna kupališta bila su mjesta susreta različitih društvenih slojeva, a posjetitelji su osim u bazenima i saunama mogli uživati u sadržajima poput knjižnica, umjetnosti, hrane, masaže i tjelovježbe.[333]

S obzirom na izvor vode, rimska su kupališta mogla biti spojena na vodovodnu mrežu, što je bio slučaj s većinom, ili su mogla biti građena na izvorima termalne vode. Kupališta građena na termalnim izvorima bila su poznata diljem rimskog svijeta, a imala su izrazito lječilišni karakter te su ih korisnici ciljano posjećivali radi ozdravljenja. Primjer je takvog kupališta, izgrađenog na izvoru sumporne vode, lječilišno-kultni kompleks u Varaždinskim Toplicama (Aquae Iasae), u kojem je građevinskim rješenjima postignuto optimalno korištenje termalne vode. Kompleks se sastoji od dvije, arhitektonski povezane, cjeline. Kupališni dio kompleksa čine zgrada kupališta i kupališna bazilika, dok se prostor svetišta sastoji od hramova i trijemova izgrađenih oko prirodnog izvora termalne vode, koji su Rimljani u 2. st. građevinskim zahvatima pretvorili

Sl. 59. Olovne cijevi, prema nekim mišljenjima, glavni krivci za propast Carstva, vrlo često nose natpise radionica u kojima su izrađene. (Sisak, 1. – 4. st., K200 – 201)
~ Fig. 59 Lead pipes, which according to some are the main culprits for the fall of the Empire, often have workshop stamps. (Sisak, 1st – 4th c., K200 – 201)

could be decorated with mosaics, reliefs or sculptures, and they sometimes had sinks for washing.[325] Most latrines were not places with high standards of hygiene. They were places where people came into contact not only with unpleasant smells but also with bacteria, so it is not surprising that sculptures of the goddess Fortuna often adorned latrine entrances.[326]

Due to uncontrolled waste and wastewater disposal, the Tiber River, the primary source of water for Roman citizens, was polluted during the Republic. In 312 BCE, the first aqueduct was constructed in Rome.[327] The development of aqueduct technology improved sanitation in Roman towns. With constant inflow of water from distant sources, aqueducts could supply water to public baths, latrines, fountains and wealthy private homes. In addition, water from the aqueduct was used for cleaning sewers, as well as farming and industry.[328] Aqueducts operated on a simple principle – gravity. In order to ensure a constant slope, Roman builders dug tunnels and built bridges where necessary. Apart from stone and brick used for the construction of aqueducts, they also used ceramic and lead plumbing.[329]

Some authors claim that the Roman Empire fell because of lead pipes and drinking water contaminated with lead. Others reject that possibility because of the high concentration of calcium in water during that period, which created deposits in the pipes, insulating them from lead.[330] Regardless of the possible risks, as is the case with sewers, development and construction of the water supply network had a positive impact on society as a whole.

PUBLIC BATHS

The development of water and sewage networks enabled significant improvements in the organization and management of public baths. In the Roman world, public baths were an indispensable part of everyday life. They were built throughout the Empire in various sizes – larger bathing complexes were called *thermae*, while *balneae* were smaller and private baths.[331] Every major Roman town had at least one public bath, and their architectural principles were described by Vitruvius.[332] Public baths were places where different social groups could meet and where visitors could enjoy various other amenities, such as libraries, arts, food, massage, and sport.[333]

327 Ashby (1935: 47)
328 Hansen (1983: 266–268)
329 Hansen (1983: 264–265)
330 Kobert (1909: 103–119); Hodge (1981: 486–491)
331 Evans (1997:9–10)
332 Vitruvije. Deset knjiga o arhitekturi. V.10.
333 Fagan (1999: 212–219)

u izvorišni bazen veličine 8 x 13,5 m. Povišeni je položaj izvorišta omogućio da se termalna voda, slobodnim padom, kanalima dovodi do kupališnog dijela. [334]

Istraživanja kupališnih kompleksa sugeriraju mogućnost da su u kupalištima djelovali liječnici. Arheološki nalazi, poput medicinskih instrumenata pronađenih u termama blizu Xantena u Njemačkoj (*Colonia Ulpia Traiana*), upućuju na mogućnost izvođenja ozbiljnijih medicinskih zahvata u termama.[335] Nalazi medicinskih instrumenata i popratnog pribora pronađeni su, primjerice, i u termama u Trieru i Weissbergu.[336] Daljnju potvrdu da su liječnici mogli djelovati unutar termi, daju nalazi iz Galije, gdje je pronađeno nekoliko okulističkih žigova (lat. *collyria*) u kontekstu termi.[337] Sve ovo svjedoči o važnoj ulozi koju su javna kupališta imala u rimsko vrijeme. Njihovom izgradnjom i širenjem diljem carstva podignuta je razina higijene, što je vjerojatno rezultiralo i promjenama u kvaliteti života.

Terme su bile neizostavni dio javne arhitekture u rimskim gradovima, o čemu svjedoče i mnogobrojna nalazišta s kupališnim kompleksima. U gradu Rimu najpoznatije i najveće bile su Karakaline, Dioklecijanove i Trajanove terme, dok su na području Hrvatske pronađeni ostaci javnih kupališta u Varaždinskim Toplicama (*Aquae Iasae*), Ščitarjevu (*Andautonia*), Daruvaru (*Aquae Balissae*), Topuskom (*Ad Fines*), Ludbregu (*Iovia-Botivo*) i Solinu (*Salona*).[338]

Sl. 60. 3D rekontrukcija svetišta i izvorišnog bazena kultno-ljećiličnog kompleksa Aquae Iasae (Varaždinske Toplice).
~ Fig. 60 A 3D reconstruction of the sanctuary and spring pool at Aquae Iasae (Varaždinske Toplice), a healing and cult centre.

Roman baths were connected to the town water supply or built directly on thermal springs. Baths built on thermal springs were well known all over the Roman world, as they were centres for healing that people visited regularly. An example of one such public bath, constructed on hot springs, is the healing and religious complex in Varaždinske Toplice (*Aquae Iasae*) where the whole area has been adapted for optimal exploitation of the thermal water. The complex is composed of two architecturally connected units. The baths area consists of thermae and basilica, while temples and colonnades were built around the thermal spring, which Romans turned into a spring pool 8 x 13,5 m in size. The elevated position of the spring and the water's resulting free fall allowed for the thermal water to flow into the baths through channels.[334]

Based on research of public baths there is a possibility that physicians worked there. Archaeological finds, such as medical instruments found in public baths near Xanten in Germany (*Colonia Ulpia Traiana*), suggest that serious medical procedures might have been performed in public baths.[335] Medical instruments and other tools have also been found in Roman baths in Trierand, Weissberg.[336] Further confirmation of medical activities in public baths comes from Gaul, where several *collyria* stamps were found.[337] This evidence suggests that public baths had an important role for Roman society. Their construction and expansion throughout the Empire raised the level of hygiene which probably resulted in a better quality of life.

Thermae were an essential part of public architecture in Roman towns, as evidenced by numerous sites containing bathing complexes. In the city of Rome, the most famous and largest public baths were Caracalla's, Diocletian's, and Trajan's. The remains of public baths in Croatia were found in Varaždinske Toplice (*Aquae Iasae*), Ščitarjevo (*Andautonia*), Daruvar (*Aquae Balissae*), Topusko (*Ad Fines*), Ludbreg (*Iovia-Botivo*) and Solin (*Salona*).[338]

ROMAN MILITARY HOSPITALS

At the beginning of the 1st century CE, the focus of the Roman army was the pacification of conquered territories. To this end, they built large military camps and auxiliary forts to accommodate soldiers.[339] To ensure proper medical care for the soldiers protecting the stability of the Empire, they build hospitals (*valetudinarium*) in military camps, such as the one found in Neuss near Düsseldorf.[340]

Roman military hospitals were rectangular buildings organized around a central courtyard.[341] The courtyard was surrounded on three sides by an inner row of rooms. The inner row of rooms opened into a hallway surrounded on three sides by an outer row of rooms. Each room was divided by a small hall into two smaller rooms. Military hospitals varied in size, which depended whether they were located in a military camp or an auxiliary fort. Apart from rooms for patients, they had baths, latrines, kitchens, and shrines.[342] Some authors suggest that some had operating theatres, while others claim that written sources do not provide enough evidence for such conclusions.[343]

In addition to the one found in Neuss, military hospitals were found in Inchtuthil, Caerleon, Veterna, Haltern, Bonn, Vindonisa, Carnuntum, and Lotschitz.[344] They were also found on other sites, and research of military camps has revealed new information about the organization and practice of military medicine in Ancient Rome.[345]

Good sanitation, nutrition, and rest provided in military hospitals certainly enabled the recovery of many wounded soldiers.[346] We can assume that practical experience and observations by military physicians were applied in civilian medical practice, contributing to the development of medicine.

334 Kušan-Špalj (2015: 24–25, 27)
335 Künzl (1986: 491–509)
336 Künzl (1986: 498); Cüppers (1977: 198–208)
337 Bourgeois, Sikora (1982: 241–248); Salles (1982: 227–228)
338 Vikić-Belančić, Gorenc (1958); Vikić-Belančić, Gorenc (1970); Fagan (1999: 69); Gregl, Migotti (2004); Schejbal (2004); Nemeth-Ehrlich, Kušan Špalj (2007); Čepelak et al. (2013); Turković, Maraković (2014)

RIMSKE VOJNE BOLNICE

Početkom 1. stoljeća fokus rimske vojske postaje pacifikacija osvojenih teritorija. U tu svrhu, diljem Carstva, podižu se veliki vojni logori ili manje utvrde za smještaj vojnika.[339] Kako bi se vojnicima koji održavaju stabilnost Carstva pružila odgovarajuća zdravstvena njega, u vojnim se logorima predviđaju prostori za bolnice (lat. *valetudinarium*), poput one u Neussu blizu Düsseldorfa.[340]

Rimske vojne bolnice bile su građevine pravokutnog tlocrta sa središnjim dvorištem koje je bilo okruženo sobama malih dimenzija.[341] Unutrašnji niz soba bio je otvoren prema hodniku, koji je s tri strane bio okružen vanjskim nizom soba. Svaka je soba bila uskim hodnikom podijeljena na dvije manje prostorije. Vojne su bolnice mogle biti različitih dimenzija, ovisno o tome jesu li se nalazile u vojnom logoru ili u pomoćnoj utvrdi. Osim soba za pacijente, vojne su bolnice mogle sadržavati i kupelji, latrine, kuhinje i svetišta.[342] Neki autori smatraju da su u vojnim bolnicama mogle postojati i sobe za operacije dok drugi tvrde da u antičkim izvorima to nije potvrđeno.[343]

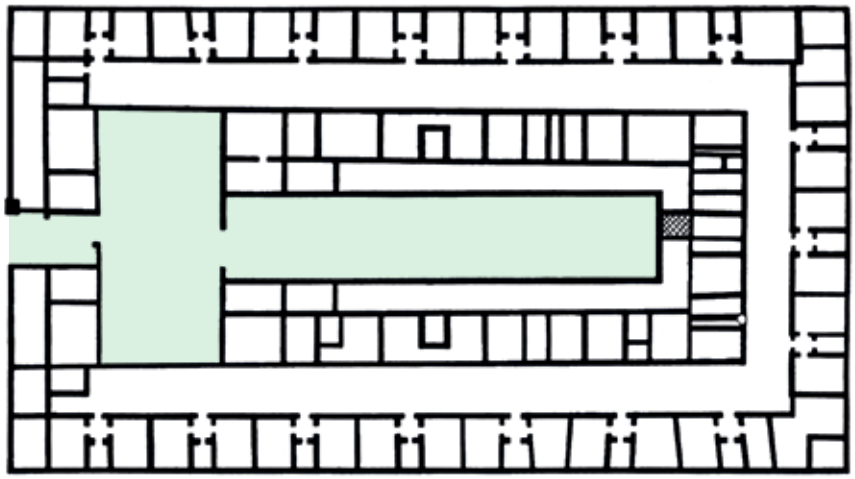
Osim bolnice pronađene u Neussu, treba spomenuti i one pronađene u Inchtuthilu, Caerleonu, Veterni, Halternu, Bonnu, Vindonisi, Carnuntumu i Lotschitzu.[344] Vojne bolnice pronađene su i na drugim nalazištima, a nova istraživanja rimskih vojnih logora otkrivaju nam nove podatke o organizaciji i praksi vojne medicine u rimskom razdoblju.[345]

Dobri sanitarni uvjeti, prehrana i odmor sigurno su omogućili oporavak velikom broju vojnika.[346] Može se pretpostaviti kako su praktična iskustva i zapažanja vojnih liječnika primjenjivana i u civilnoj liječničkoj praksi, pridonoseći tako razvoju antičke medicine.

JESU LI RIMLJANI IMALI JAVNO ZDRAVSTVO?

Tehnološki napredak, a vidljivo je to i na primjeru suvremenog doba, nosi sa sobom i potencijalni negativni utjecaj na okoliš i populaciju. Gradnja je cesta Rimu omogućila ekspanziju i razvoj, ali je u nekim slučajevima mogla uzrokovati prekid prirodne odvodnje voda, što je rezultiralo stvaranjem močvarnih područja. Negativan učinak imalo je i agresivno iskorištavanje šumskih resursa.[347] Razvoj kanalizacije i odvodnje u izvjesnoj je mjeri riješio dio problema, ali je sa sobom nosio neke druge, poput problema kontaminacije izvora pitke vode, koji su pak otklonjeni izgradnjom vodovodne mreže. [348]

Briga o javnom zdravstvu u Rimu uključivala je, osim izgradnje i održavanja infrastrukture (vodovod, kanalizacija, latrine, i sl.), razne propise koji reguliraju ukapanje pokojnika, smještaj određenih obrta, čišćenje ulica, nadzor prodaje hrane i sl.[349] No briga za javno zdravlje u Rimu odnosila se,



Sl. 61. Tlocrt valetudinarija, rimske vojne bolnice, prikazuje zgradu čije su prostorije u dva reda koncipirane oko središnjeg dvorišta. Crtež prema valetudinariju iz Neussa (Dusseldorf, Njemačka).
~ Fig. 61 Ground plan of a valetudinarium, a Roman military hospital with rooms organized around a central courtyard. Illustration based on valetudinarium from Neuss (Dusseldorf, Gremany).

DID ROMAN HAVE PUBLIC HEALTH SYSTEM?

Technological progress, as we are aware of, carries with it a potential negative impact on the environment and population. The construction of roads enabled the expansion and development of Rome; however, it interrupted the natural drainage canals which resulted in the creation of marshy areas. Deforestation had a similar effect.[347] The development of sewerage and drainage systems reduced the problem but created others in increasing the possibility of pollution of water sources. That problem was solved by the construction of the water supply network.[348]

Public health management in Rome included the maintenance and construction of infrastructure (water supply and sewage systems, latrinae, etc.) as well as various regulations concerning the burial of the dead, location of certain trades, street cleaning, control of food markets, etc.[349] However, the concern for public health in Rome had a positive effect primarily on the rich and privileged that lived in urban areas. The poor continued to live in overcrowded areas with precarious sanitation, and the services of trained physicians were, in most cases, available only to the wealthy.[350]

Roman administration carried out major public works and developed policies aimed at preventing disease that, regardless of all potentially negative consequences, resulted in a decreased morbidity, as well as faster recovery of patients.[351] Therefore, there was an obvious awareness of the importance of public health in Roman times, a fact confirmed by many ancient sources.

339 Jackson (1988: 130–132)
340 Waterman (1970)
341 Baatz (1970: 8–10); Majno (1975: 382–396); Jackson (1988: 136–137); Salazar (2000: 76–81)
342 Baker (2004: 108)
343 Schultze (1934); Salazar (2000: 81)
344 Baker (2004: 54–63)
345 Aparaschivei (2012: 99–118)
346 Belfiglio (2015: 464)
347 Sallares (2002: 39); Hays (2005: 9)
348 Koloski-Ostrow (2015: 81–82); Evans (1997: 9–10)
349 Porter (1999: 18–19)

prije svega, na bogate i povlaštene u urbanim sredinama. Siromašni su i dalje živjeli u prenapučenim prostorima i nezavidnim higijenskim uvjetima, a usluge školovanih liječnika bile su dostupne, u većini slučajeva, samo imućnim građanima.[350]

Rimska je administracija provodila velike javne radove i donosila pravilnike kojima je svrha bila prevencija bolesti, što je rezultiralo smanjenjem stope oboljenja, kao i bržim oporavkom bolesnika.[351] Stoga se može zaključiti kako je u rimsko vrijeme postojala svijest o javnom zdravlju i javnom zdravstvu.

Sl. 62. Strigil možemo smatrati dijelom higijenskog pribora jer je služio za uklanjanje nečistoća s tijela, osobito pri gimnasticiranju, te se često nalazi u termama. Neki autori navode i njegovu moguću medicinsku funkciju jer se zbog njegovog savinutog oblika pacijentu mogla uliti tekućina u grlo. (Sisak, 1. – 4. st., K82)
~ Fig. 62 A strigil is a toiletry utensil used for scraping dirt from the surface of the skin, especially after sports. It is often found in Roman baths. Some authors write about its use in medicine, for pouring liquids into the patient's throat. (Sisak, 1st – 4th c., K82)

OPASNOSTI ULICA STAROGA RIMA

Već u 1. stoljeću pr. Kr. u gradu Rimu živi oko milijun stanovnika.[352] Lako je za pretpostaviti kako je u jednoj tako gusto naseljenoj urbanoj sredini bilo mnogo problema. Uvid u to pruža nam rimski satiričar Juvenal (lat. Decimus Iunius Iuvenalis, kasno 1. i rano 2. stoljeće), poznat po svojim *Satirama*. On tako upozorava čitatelje da im u svakom trenutku na glavu može doletjeti slomljena posuda ili da ih mogu zaliti sadržajem noćnih posuda. Prema Juvenalu, nikada se ne zna kada ćete naletjeti na pijane nasilnike i kako će to djelovati na vaše zdravlje.[353]

Rimske su ulice poput nepregledne mreže uskih prolaza, neka vrsta labirinta, bez javne rasvjete i sigurnosti.[354] No, unatoč opasnostima, Rim je bio i mjesto gdje ste se u noćnim satima mogli zabaviti, odlaskom u tavernu ili, poput cara Nerona, čija je ideja zabave bila prerušiti se i izaći s prijateljima na mračne rimske ulice u potrazi za zabavom i masovnom tučnjavom.[355]

Sl. 63. U fundsu AMZ-a nalaze se tri dvostruke sonde s maslinastim završecima, jedna od njih ima pravokutno oblikovanu ušicu na jednom od završetaka. (Sisak, 1. – 4. st., K151 – 153)
~ Fig. 63 The Collections of the AMZ hold three double olivary end probes, and one of them has a perforation on one olivary end. (Sisak, 1st – 4th c., K151 – 153)

DANGERS ON THE STREETS OF ROME

In the 1st century BCE, the city of Rome had around one million inhabitants.[352] It is easy to assume that, in such a densely populated and multicultural urban centre, there were many problems. Insight into some of those problems is provided by the Roman poet Juvenal (*Decimus Iunius Iuvenalis*, late 1st and early 2nd century CE), famous for his *Satires*. He warns his readers that, at any time, a broken pot can land on their head or that they can be covered in excrement. According to him, one never knows when one might run into drunken thugs and how that will affect one's health.[353]

Roman streets were like a vast network of narrow passages, a kind of urban labyrinth, without street lighting or security.[354] Yet, despite the dangers, Rome was a place where you could have a good time, whether by going to a tavern or, like the emperor Nero, wearing a disguise and taking your friends for a night on the town looking for fun or a mass brawl.[355]

350 Nutton (1988: 254); Robinson Olivier (1992: 110–111)
351 Schneider, Lilienfeld (2008)
352 Lo Cascio (1997)
353 Juvenal. Saturae III.268–288
354 Beard (2012)
355 Svetonije. De vita Caesarum VI.26.

VELIKE BOLESTI ANTIKE
~
GREAT DISEASES OF ANTIQUITY

Napori koje su pojedinci, ali i čitave zajednice, ulagali da bi se spriječila ili zaustavila bolest najbolje se vide u ranim pokušajima stvaranja zdravih uvjeta za život. Najdalje su u tome dospjeli Rimljani, kod kojih možemo govoriti o stvaranju sustava javnog zdravstva u kojem je država ciljanim radnjama ulagala u zdravlje svojih stanovnika.

Ipak ponekad su antički liječnici bili jednostavno nemoćni pred napredovanjem bolesti. Takvi slučajevi najbolje su ilustrirani brzim i nezaustavljivim širenjem pojedinih zaraznih bolesti tijekom antike. Uz tajanstvene epidemije, koje su odnijele na tisuće života, spomenut ćemo i odnos antičkih liječnika te laika prema psihičkim bolestima koje su ih podjednako zbunjivale i fascinirale.

EPIDEMIJE U ANTICI

Prvo poglavlje Ilijade otvara se s pošasti koju je Apolon poslao na grčke snage pod Trojom na zagovor svog svećenika Hrisa. Kako bi Grci udobrovoljili ljutog boga, vraćaju Hrisu njegovu kćer Hriseidu, nakon čega se pošast povlači.[356] Prikaz nepoznate pošasti koja je pogodila Ahejce kao iskaz božanske volje, indikativna je za način na koji su Grci doživljavali epidemije u ranoj antici. Vjerovanje da velike epidemije koje pogađaju mnoge, moraju imati nadnaravni uzrok rasprostranjena je u starom vijeku diljem Mediterana, a zadržati će se i tijekom srednjeg vijeka zahvaljujući Starom zavjetu.[357]

Epidemije su uvijek imale dalekosežne posljedice na društvo koje su zahvaćale. Njihovo širenje povezano je s brojnim društvenim i ekonomskim čimbenicima, poput prehrane stanovništva, demografije, javnog zdravstva, statusa i društvenog položaja.[358] Često izbijanje epidemije prate ostale razarajuće društvene posljedice, poput rata, gladi, depopulacije određenog prostora, nazadovanja gospodarstva i erozije društvenih odnosa i institucija.

Danas je općeprihvaćeno mišljenje da je većina zaraznih bolesti zapravo nastala prijenosom uzročnika s životinje — nosioca na čovjeka — domaćina.[359] Uzročnici zaraznih bolesti su brojni — bakterije, virusi, rikecije i protozoe te razni paraziti.[360] Većina zaraznih bolesti treba kritičnu masu da bi se počela šir-

Sl. 64. Ušne sonde iz fundusa AMZ-a većinom imaju prošireni nastavak u obliku polukružne ravne pločice. Samo manji dio ima konkavni nastavak oblikovan poput male žličice. (Sisak, 1. – 4. st., K145 – 150)
~ Fig. 64 Ear probes from the AMZ usually have flat round recipients, but a small number have small, concave, spoon-like, recipients. (Sisak, 1st – 4th c., K145 –150)

The efforts made by individuals or entire communities, in order to prevent or halt the disease are best seen in the early attempts to create healthy living conditions. The mayor improvements were achieved by Romans. We can discuss the creation of the public health system in which the state undertook specific actions invested in the health of its residents.

But sometimes ancient physicians were simply helpless against the disease progresses. Such cases are best illustrated by the rapid and unstoppable spread of certain infectious diseases during antiquity. Alongside mysterious epidemics, which claimed thousands of lives, we will mention the attitude of ancient physicians and lay people toward mental illnesses that were equally puzzling and fascinating.

GREAT EPIDEMICS OF ANTIQUITY

The *Iliad* opens with a plague sent by Apollo to the Greek forces at Troy. Apollo sent the plague because Agamemnon had taken his priest Chryses's daughter and would not return her. To appease the angry god, the Greeks returned Chryses his daughter and the plague disappeared.[356] The description of the plague that hit the Acheans as a form of divine will is indicative of the way Greeks understood epidemics in early antiquity. The belief that a major epidemic must have a supernatural cause was widespread in Antiquity. Because of the Old Testament, the belief remained popular even during the Middle Ages.[357]

Epidemics and plagues have always had far-reaching effects on society. They have been associated with many social and economic factors such as nutrition, demography, public health, social status and position.[358] An outbreak of disease was often followed by devastating social consequences such as war, famine, depopulation of certain area, economic downturn and erosion of social relations and institutions.

We know now that most infectious diseases were actually caused by a transfer of patho-

356 Homer. Ilijada.
357 U Starom zavjetu Jahve često šalje epidemije na Izraelce kao kaznu za neki od prijestupa. U priči o izlasku iz egipatskog ropstva epidemiju pak šalje na Egipćane, dok njegov izabrani narod ostaje pošteđen.
~ In the Old Testament, the Lord often sent epidemics to Israel as punishment for some offenses. In the story of the exodus, an epidemic was sent to Egyptians while God's chosen people were spared.
Stari zavjet. Knjiga izlaska. 9:14, 16; 12:13, 15:26; Nutton (2004: 39)
358 King (2005: 12)
359 Primjeri su takvih bolesti male i velike boginje, gripa, zaušnjaci i ospice.
~ For example, smallpox, influenza, mumps and measles.
360 Mitchell (2010: 171)

iti, tek kad ljudi počinju živjeti u velikom broju na malom prostoru i kad njihovi međusobni kontakti postaju česti, bolest nailazi na plodno tlo za svoje bujanje. Gusto naseljeni gradovi Mediterana, sa svojom razvijenom prekomorskom trgovinom, zapravo su osigurali idealne uvijete za nastanak i širenje epidemija u antici.[361]

U grčkom klasičnom razdoblju, s pojavom racionalnog objašnjavanja svijeta, počinju se tražiti prirodni uzroci epidemija koje pogađaju antičko stanovništvo. Autori Hipokratovog korpusa shvaćaju da pojedini klimatski i geografski faktori utječu na pojavu pošasti te da one podjednako zahvaćaju oboljele svih društvenih slojeva. Mnogi kasniji antički autori vide uzrok epidemija u ustajalom zraku.[362] Ipak se kroz cijelu antiku provlači mišljenje da bogovi svojom intervencijom mogu promijeniti tijek bolesti ili je pak zaustaviti.

ATENSKA KUGA

Termin kuga koristio se tijekom antike u širem smislu za svaku bolest koja je zahvaćala široke slojeve stanovništva. Najpoznatija epidemija klasičnog grčkog razdoblja, pod nazivom atenska kuga, pogodila je grad Atenu u drugoj godini Peleponeskog rata, 430. g. pr. Kr., te se vratila, iako smanjenom snagom, u dva navrata, 429. i 427./426. g. pr. Kr. Detaljan opis bolesti i posljedica koje je imala na atensko društvo donosi nam Tukidid, atenski kroničar i general, koji je i sam prebolio epidemiju, u svom djelu *Povijest peleponeškog rata*.[363] Epidemija nije bila ograničena samo na grad Atenu, već je harala diljem Sredozemlja, ali s manje razarajućim posljedicama.

Tukidid opisuje kako je bolest nastala u Africi, a u Atenu je vjerojatno stigla kroz luku Pirej, koja je opskrbljivala grad u koji se povukla Periklova vojska. Loši higijenski uvjeti i prenapučenost unutar gradskih zidina pridonijeli su brzom širenju bolesti koja je oduzela živote između jedne i dvije trećine atenskog stanovništva. Bolesti je podlegao i vojskovođa Periklo sa svojim sinovima. Tukidid posvećuje dio opisa i posljedicama koje je kuga imala na društvenu strukturu Atene. Zavladalo je potpuno bezvlađe i beznađe. U strahu od bolesti koja nikog nije izostavljala, ljudi nisu njegovali zaražene niti su pokapali mrtve. I sami su liječnici bježali od oboljelih jer su se bojali zaraze. Mnogi su vjerovali da je pošast znak da bogovi stoje na strani Sparte, osobito Apolon.[364] Sam Tukidid, pak, smatra da je to čisto praznovjerje i u skladu s humoralnom teorijom traži prirodni uzrok. Ipak su atenske vlasti poduzele određene mjere kako bi udobrovoljile Apolona.[365]

Tukidid opisuje brzi tijek bolesti i njezine simptome. Većina je bolesnika umirala unutar sedam do devet dana.[366] Iako je nemoguće utvrditi stvarnu razinu smrtnosti, arheološka istraživanja potvrđuju ozbiljni mortalitet za vrijeme datiranja epidemije. Na atenskom groblju Kerameikos pronađene su masovne

Sl. 65. Ušne sonde mogle su imati različito ukrašene držače, ovdje su prikazani primjerci ukrašeni urezivanjem i prstenastim zadebljanjima. (Sisak, 1. – 4. st., K135 – 141)
~ Fig. 65 Ear probes can have handles with various ornaments, examples showed here are decorated with incisions and ring moulding. (Sisak, 1st – 4th c., K135 – 141)

gens from animal to human hosts.[359] Disease can be caused by numerous infectious agents like bacteria, viruses, rickettsia and protozoa, as well as various parasites.[360] Most infectious diseases must reach a critical mass in order to spread. Disease spread rapidly when people started living in small areas in large numbers, and their mutual contact became more frequent. In the Mediterranean, densely populated cities with developed overseas trade provided ideal conditions for the emergence and spread of epidemics in Antiquity.[361]

With the emergence of rational thinking during the Classical period, people began to look for natural causes of epidemics that plagued ancient populations. Authors of the Hippocratic corpus realized that certain climatic and geographical factors influenced the appearance of plagues which affected all social classes equally. Many late ancient authors saw stale air as the cause of epidemics.[362] Despite all this, the belief that gods could change or stop the course of an epidemic never disappeared throughout Antiquity.

PLAGUE OF ATHENS

During Antiquity, the term plague was used for every disease that affected the entire population. The most well known epidemic in the Classical period, called the Plague of Athens, affected the city of Athens in the second year of the Peloponnesian war (430 BCE) and returned, but with less force, in 429 BCE and in 427/426 BCE. A detailed description of the disease and the effects it had on Athenian society was recorded by Thucydides, in his *History of Peloponnesian war.*[363] The epidemic was not confined to the city of Athens. It swept across the Mediterranean but with less devastating consequences.

Thucydides said the disease originated in Africa and probably arrived in Athens through the port of Piraeus, which supplied the city that housed Pericles' army. Poor sanitary conditions in the overcrowded city contributed to the rapid spread of the disease that took the lives of up to two thirds of the Athenian population. Military leader Pericles and his sons also succumbed. Thucydides described the consequences that the plague had had on the Athenian society. It provoked utter anarchy and hopelessness. People did not nurse the infected nor buried the dead out of fear of being infected themselves. Even physicians avoided the sick. Many believed that the plague was a sign that the gods, especially Apollo, were taking Sparta's side[364] Thucydides regarded this to be mere superstition and believed the disease had a natural cause. Nevertheless, Athenian authorities took certain measures to appease Apollo.[365]

361 Cockburn (1963: 87)
362 Nutton (2004: 39)
363 Tukidid (grč. Θουκυδίδης, c. 460. – 400. g. pr. Kr.), atenski povjesničar i vojskovođa, autor Povijesti peleponeških ratova (grč. Ιστορία του Πελοποννησιακού Πολέμου).
~ Thucydides (Θουκυδίδης, c. 460 – 400 BCE), Athenian historian and military leader, author of the History of Peloponnesian Wars (Ιστορία του Πελοποννησιακού Πολέμου).
Thucydides. History of the Peloponnesian War. 1.117
364 Thucydides. History of the Peloponnesian War. 2.53, 2.54
365 Da bi umirile Apolona, atenske su vlasti 426. g. pr. Kr poslušale savjet proročišta te su ritualno pročistile Del, otok svet Apolonu. Zabranile su daljnja sahranjivanja mrtvih na otoku i obnovile svetkovinu u čast Apolona i Artemide. I u Ateni su obnovljeni mnogi zapušteni hramovi. Također se unutar desetljeća u gradu pojavio kult potpuno novog lječilišnog božanstva, Asklepija.
~ To appease Apollo, Athenian authorities listened to the oracle's advice and, in 426 BCE, ritually purified Delos, Apollo's sacred island. They forbade further burials on the island and restored the annual festival honoring Apollo and Artemis. In Athens, many abandoned temples were restored. Also, within a decade, Asclepius, a new healing deity, appeared in the city.
Nutton (2004: 130)
366 Manger (2005: 102–103)

grobnice i preko 1000 individualnih grobova koje se datiraju u razdoblje između 430. i 426. g. pr. Kr. Karakter masovnog ukopa govori nam da su pokojnici sahranjeni u vrlo kratkom vremenu te da im se pri ukopu nije pridavala nikakva posebna pažnja.

Koja se bolest točno krije iza prikaza atenske kuge, još uvijek nam nije poznato. Do sada je ponuđeno preko 30 mogućih uzročnika bolesti.[368] Ono što je pak sigurno, činjenica je da je atenska kuga poštedila vojsku Sparte i njezinih saveznika te potpomogla konačnom porazu Atene u Peleponeskom ratu.

ANTONINSKA KUGA

Rimljani su se, također, vrlo često susretali s epidemijama zaraznih bolesti kroz svoju povijest. Jedna od najbolje dokumentiranih epidemija zahvatila je Rimsko Carstvo u drugoj polovici 2. st. Nekoliko se puta pojavljivala i naizgled nestajala između 165. i 180. g. Prema vladajućoj dinastiji tog vremena naziva se antoninskom kugom. Galen je spominje u svojoj raspravi *Methodus Medendi* pa se često naziva i Galenovom kugom.

Galen je 166. g. napustio Rim i otišao u rodni Pergam, da bi ga dvije godine kasnije car Marko Aurelije i njegov suvladar Lucije Ver pozvali natrag. U Akvileji se tijekom zime na prijelazu 168. u 169. g. susreo s bolesti koja je pogodila stacionirane legionare. Galen šturo opisuje simptome bolesti.[369] Na temelju njegovih opažanja tradicionalno se smatralo da je kuga zapravo bila epidemija malih ili velikih boginja.[370] Antički se izvori slažu da se bolest prvo pojavila među rimskim vojnicima na Bliskom istoku, prilikom opsade Seleukije na Tigrisu.[371] Putujući s rimskim legijama, brzo se proširila Carstvom sve do Galije i granice uz Rajnu. Kasije Dio navodi da je bolest ponovno izbila nakon devet godina te da je samo u Rimu umiralo 2000 ljudi dnevno.[372] Njezin je odjek u povijesti bio tako velik da je Paulo Orosio, svećenik i kroničar s kraja 4. st., naveo kako su neki gradovi na apeninskom poluotoku, ali i diljem provincija, potpuno izumrli.[373]

Utjecaj koji je antoninska kuga imala na razne aspekte rimskog života, bio su drastičan, osobito kada je riječ o gubicima koje je uzrokovala u rimskim legijama. Posljedice su bile osobito vidljive na rajnskom i dunavskom limesu, gdje se oslabljena rimska vojska više nije mogla nositi s nadirućim barbarskim plemenima. Velika je ofenziva protiv Markomana, zbog nedostatka ljudstva, odgođena za 169. godinu.[374] Car Marko Aurelije spominje pošast u svojim *Mislima*, posebno navodeći moralno propadanje u društvu, koje ju je pratilo.[375]

Kao i kod atenske kuge, sama priroda bolesti koja je uzrokovala ovu pošast, možda nikada neće biti poznata. Smatra se da je, najvjerojatnije, bila riječ o boginjama ili ospicama.[376]

Thucydides described the rapid course of the disease and its symptoms. Most patients died within seven to nine days.[366] While it is impossible to determine the true number of deaths, archaeological research confirms a high mortality during the epidemic. At Kerameikos cemetery in Athens, mass graves and over 1,000 individual graves were found that date back to the period between 430 and 426 BCE. Mass burials suggest that the dead were buried in a very short period and were not given any special treatment.[367]

What disease hides behind the description of Thucydides' plague is still unknown. So far, more than 30 potential pathogens have been offered as the potential cause.[368] However, one thing is certain. The plague spared Sparta's army and its allies which contributed to the final defeat of Athens in the Peloponnesian war.

ANTONINE PLAGUE

Romans often encountered outbreaks of infectious diseases throughout their history. One of the best-documented pandemics spread through the Roman Empire in the second half of the 2nd century CE. It appeared several times and apparently disappeared between 165 and 180 CE. It was named the Antonine plague, after the ruling dynasty at the time of its outbreak. Galen mentioned the plague in his treatise *Methodus medendi* so it was often referred to as the Plague of Galen.

Galen left Rome in 166 BCE and went to Pergamum. Two years later, Emperor Marcus Aurelius and his co-emperor Lucius Verus summoned him to come back. During the winter of 168/169 CE, he encountered the diseases in Aquileia. It infected the legionaries stationed there. Galen briefly described the symptoms of the disease.[369] Based on his observations, it is believed that the plague was actually an epidemic of smallpox.[370]

Ancient sources agree that the disease first appeared among Roman soldiers in the Middle East during the siege of Seleucia on the Tigris.[371] Traveling with the legions, the disease quickly spread throughout the Empire all the way to Gaul and the border on the Rhine. Cassius Dio said that the disease broke out again after nine years, and killed 2000 people every day in Rome alone.[372]

According to Paulus Orosius, priest and chronicler in the late 4th century, some cities in the Apennine peninsula and throughout the provinces completely died out.[373]

The Antonine plague had a drastic impact on various aspects of Roman life, especially when we take into account losses in the Roman legions. The consequences were particularly noticeable along the Rhine and Danube limes where a weakened Roman army could no longer cope with the invading barbaric tribes. Due to lack of manpower, large-scale offensive against the Marcomanni tribe was postponed until 169 CE.[374] Emperor Marcus Aurelius mentioned the plague in his *Meditations*, particularly citing the moral decay that followed it.[375]

Like in the case of the Athenian plague, the exact nature of the disease that caused it may never be known. Smallpox and measles are considered as the most likely candidates.[376]

PLAGUE OF CYPRIAN

Less than a hundred years after the outbreak of the Antonine plague, the Roman Empire was struck with a new epidemic. The plague of Cyprian was named after a Carthaginian bishop St. Cyprian who described the symptoms. It appeared in 250 CE in Carthage and raged for more than 20 years.[377]

In his essays *On the Plague* (*De Mortalite*), St. Cyprian wrote the disease infected everyone and that large numbers of people died every day.[378] There was panic as people unsuccessfully tried to escape the infection. The deceased were not buried and soon dead bodies filled the city streets. The outbreak of the plague in Carthage coincided with the beginning of the Decian persecution so Romans blamed the resulting disease on mem-

367 Axarlis. Plague Victims Found: Mass Burial in Athens. (10. 10. 2016.).
368 Papagrigorakis et al. (2008: 161–173); Olson et al. (1996: 155–156); Manger (2005: 102– 103)
369 Galen. Methodus Medendi.
370 McLynn (2009: 417, 419, 424)
371 Sicker (2000: 169); Nutton (2004: 24)
372 Dio Cassius. Roman History. 72.14.3–4
373 Paulus Orosius: Seven Books of History Against the Pagans; Murphy. Past pandemics that ravaged Europe. (: 07.11.2016.)
374 I sam suvladar Marka Aurelija, car Lucije Ver, umro je 169. g. od simptoma koje su znanstvenici kasnije povezali s prevladavajućom epidemijom.
~ Co-emperor Lucius Verus died in 169 BCE of symptoms that scientists later attributed to the prevailing epidemic.
McLynn (2009: 374)
375 Marko Aurelije. Misli.
376 McNeill (1976: 95); Stathakopoulos (2007: 95); Furuse et al. (2010: 52)

CIPRIJANOVA KUGA

Niti stotinu godina nakon izbijanja antoninske kuge Rimsko je Carstvo pogodila nova epidemija. Ciprijanova kuga nazvana je tako po kartaškom biskupu, svetom Ciprijanu, koji je opisao njezine simptome. Pojavila se oko 250. g. te je više od 20 godina bjesnjela Carstvom.[377]

Sveti Ciprijan u svojim esejima *O pošasti* (lat. *De mortalitate*) opisuje da je pošast zahvaćala sve slojeve društva te da su ljudi svakodnevno umirali u velikom broju.[378] Nastala je panika te su ljudi bezuspješno pokušavali pobjeći od zaraze. Tijela pokojnika nisu bila sahranjivana pa su ubrzo trupla ispunila gradske ulice. Početak kuge u Kartagi podudario se s početkom Decijevih progona, pa su Rimljani, kao krivce za nastalu pošast, okrivili pripadnike nove religijske sekte, kršćane. S druge strane, sveti Ciprijan poziva kršćane da se ne boje kuge jer je ona dokaz božje ljubavi i milosti.[379]

Uzročnik epidemije ostaje nepoznat, kao i u slučaju ranije antoninske kuge, a najizglednije je da je bila riječ o boginjama ili ospicama. Neki povjesničari smatraju da je epidemiju uzrokovala najprije jedna bolest, a onda i druga, iako nije poznato kojim redom.[380]

JUSTINIJANOVA KUGA

Jedna od najpoznatijih epidemija u ljudskoj povijesti bjesnila je Istočnim Rimskim Carstvom sredinom 6. st., periodično se pojavljivala u Europi sve do u 8. st. te se smatra da je u periodu od dva stoljeća uzela između 25 i 50 milijuna života.[381] Ime nosi prema bizantskom caru Justinijanu I, za čije se vladavine pojavila u Europi. I sam se Justinijan bio zarazio bolešću, ali je preživio. Kugom je osobito bio pogođen Konstantinopol, velike luke diljem Mediterana te susjedno Sasanidsko Kraljevstvo.

Smatra se da je kuga 541. g. stigla u Konstantinopol iz Egipta, iz kojega je Bizantsko Carstvo uvozilo velike količine žita.[382] Detaljan opis epidemije donosi bizantski povjesničar Prokopije, koji ju prvi spomnje, navodeći da se javila u egipatskoj luci Pelusij, blizu Sueza. U svom djelu *Skrivena povijest* daje podatak da je samo u Konstantinopolu umiralo i do 10 000 ljudi dnevno te opisuje razarajuće posljedice koje je bolest imala na grad i okolicu. Mrtvi nisu pokapani i zadah smrti širio se gradom.[383]

Danas je poznato da je Justinijanova kuga prva zabilježena epidemija prave bubonske kuge, koju uzrokuje bakterija *Yersinia pestis*.[384] Kuga je dobila ime po upaljenim i povećanim limfnim čvorovima (grč. βουβών) u kojima se bakterije razmnožavaju. Bubonska kuga prenosi se ugrizom buhe, koje pak prenose štakori.[385] Ako se ne liječi, postotak smrtnosti kod oboljelih iznosi iz-

Sl. 66. Drške ušnih sondi mogu imati različita zadebljanja, koja također mogu biti ukrašena. (Sisak, 1. – 4. st., K128 – 134)
~ Fig. 66 Ear probe handles can have various enlargements that can also be decorated. (Sisak, 1st – 4th c., K128 – 134)

bers of a new religious sect, the Christians. On the other hand, Cyprian urged Christians not to be afraid of the plague because it was proof of God's love and mercy.[379]

The cause of the epidemic remains unknown, but as with the earlier Antonine plague the most likely candidates are smallpox or measles. Some historians believe that the two epidemics were caused first by one disease and then the other, although it is not clear in what order.[380]

PLAGUE OF JUSTINIAN

One of the best known pandemics in human history raged across the Eastern Roman Empire in the mid 6th century CE. It appeared periodically in Europe until the 8th century and claimed between 25 and 50 million lives over two centuries.[381] It was named after the Byzantine emperor Justinian I, since it appeared during his reign. Justinian also contracted the disease, but he survived. The plague especially afflicted Constantinople, large ports across the Mediterranean and the neighbouring Sasanian Empire.

It is believed that the plague arrived to Constantinople from Egypt in 541 CE, since the Byzantine Empire imported large quantities of grain from there.[382] A detailed description of the epidemic comes from the Byzantine historian Procopius who was the first to mention the disease. According to him, it appeared in the Egyptian port of Pelusium, near Suez. In his book *Secret History*, he mentioned that up to 10,000 people died every day in Constantinople alone, and described the devastating consequences that the disease had on the city and surrounding area. The dead were left unburied and the smell of rotten corpses filled the city.[383]

It is known today that the Plague of Justinian was the first recorded epidemic of the bubonic plague caused by the *Yersinia pestis* bacteria.[384] The bubonic plague was named after the swollen and enlarged lymph nodes (Βουβών) in which the bacteria multiplies. The bubonic plague was transmitted by fleas, which in turn were carried by rats.[385] If left untreated, the death rate is between 40 and 60 per cent. Apart from the outbreak during Justinian's reign, the best known occurrence of the bubonic plague was the Black Death

377 Od posljedica bolesti 270. g. je umro i rimski car Klaudije II Gotski. Carske povijesti (lat. *Historia Augusta*) kasnoantički su zbornik biografija rimskih careva, od Hadrijana do Karina i Numerijana. Nastanak djela i njegov autor ostaju nepoznati.
~ In 270, Roman emperor Claudis Gothicus also died from the disease. *Augustan History* (*Historia Augusta*), is a work from Late Antiquity containing biographies of Roman emperors, from Hadrian to Carinus and Numerian. When and who composed it remains unknown. Historia Augusta. (16. 11. 2016.)
378 Cyprian: De Mortalitate. (16. 11. 2016.)
379 Cyprian: De Mortalitate. (16. 11. 2016.); Nutton (2004: 287)
380 McNeill (1976: 95); Stathakopoulos (2007: 95)
381 Rosen (2007: 3)
382 Cule (1975: 141–155); Conrad (1981: 83–119)
383 Procopius. Skrivena povijest; History of the Wars, 7 Vols.
384 Maria: Plague DNA found in ancient teeth shows medieval Black Death, 1,500-year pandemic caused by same disease. National Post. (18. 11. 2016.)
385 Healthagen, LLC. Symptoms of Plague. Brief Overview of Plague. (20. 11. 2016.)

među 40 i 60 posto. Uz epidemiju iz Justinijanovog doba, najpoznatija pojava bubonske kuge je Crna smrt koja je harala Europom sredinom 14. st., te je odnijela između 75 i 200 milijuna života (između 30 i 60 posto tadašnje europske populacije).[386] Da je ista bakterija uzročnik obiju epidemija, dokazala su i genetska istraživanja provedena nad ostacima pokojnika iz grobova koji se datiraju u period haranja Justinijanove kuge, u kojima je je DNA analizom utvrđena prisutnost bakterije *Yersinia Pestis*.[387]

Posljedice Justinijanove kuge na Istočno Bizantsko Carstvo bile su dalekosežne. Kuga je izbila u trenutku velikih Justinijanovih kampanja protiv Vandala u Africi i Ostrogota u Italiji. Kako je kuga poharala velike luke i njihovo zaleđe, trgovina i poljoprivredna proizvodnja gotovo su zamrle. Zbog smanjenja prihoda od poreza, samo financiranje Justinijanovih osvajanja dovedeno je u pitanje, kao i nastavak velikih graditeljskih pothvata u Konstantinopolu.[388] Neki autori čak spekuliraju da je zbog kuge došlo do pomicanja centra moći s Mediterana na Sjeverno more jer bolest nije zahvatila područja Galije, Germanije i Britanske otoke.[389]

OSTALE ZARAZNE BOLESTI U ANTICI

MALARIJA

Jedna od zaraznih bolesti koja je prevladavala diljem Sredozemlja još od prapovijesti i ostavljala dalekosežne društvene posljedice, bila je malarija. Uzročnik malarije je parazit tipa *Plasmodium*, kojeg ljudima i životinjama prenose komarci. Simptomi uključuju groznicu, umor, povraćanje i glavobolju, a ako se ne tretira može dovesti do napadaja, kome i, naposljetku, smrti.[390] Lawrence Angel prvi je prepoznao česte lezije na svodu lubanje i na dugim kostima kod skeletnih ostataka kao indikatore određene vrste nasljedne anemije (talasemije). Talasemijom se stječe određeni oblik otpornosti na malariju, pa je učestalost upravo te vrste anemije pokazatelj učestalosti malarije među populacijom u prošlosti.[391]

Najopasniji oblik malarije, koju uzrokuje parazit *Plasmodium falciparium*, poznatiji kao kvartanska groznica, bio je raširen diljem Sredozemlja tijekom antike.[392] Egipatski medicinski spis, Papirus Ebers, sugerira postojanje malarije, a arheološku podlogu nude pronalasci mumija s povećanim slezenama, što je jedan od simptoma bolesti.[393]

Dugo se smatralo da se malarija proširila antičkom Grčkom tek u 5. st. pr. Kr. ili da se raširila Sredozemljem tek za vrijeme Rimskog Carstva. No upravo su genetska istraživanja talasemije potvrdila da se ona već u 8. st. pr. Kr. širi Sredozemljem kao vrsta obrane upravo od malarije, a to se širenje može povezati i s ranim fazama grčke kolonizacije.[394]

Sl. 67. Držači ušnih sondi mogu biti tordirani, većim dijelom drške ili samo na manjim segmentima. (Sisak, 1. – 4. st., K142 – 144)
~ Fig. 67 The entire length of the handle of ear probes can be twisted, or just small segments. (Sisak, 1st – 4th c., K142 – 144)

that swept across Europe in the mid 14th century and claimed between 75 and 200 million lives (between 30 and 60 per cent of the population in Europe).[386] DNA analysis conducted on the remains found in the graves that date back to the Plague of Justinian have revealed the presence of *Yersinia pestis* and proven that the same bacteria caused both outbreaks.[387]

The consequences of the plague in the Byzantine Empire were far-reaching. The plague broke out at a time of Justinian's great campaign against the Vandals in Africa and Ostrogoths in Italy. As the plague paralyzed large ports, trade and agricultural production nearly ceased. Because of the reduction in taxes, the funding for Justinian's conquests was brought into question, as well as the continuation of large construction projects in Constantinople.[388] Some authors even speculate that the plague caused the centre of power to move from the Mediterranean to the North Sea because the disease did not affect areas of Gaul, Germany and the British Isles.[389]

OTHER INFECTIOUS DISEASES IN ANCIENT TIMES

MALARIA

One of the infectious diseases that dominated the Mediterranean since prehistoric times and had far-reaching social consequences has been malaria. Malaria is caused by parasitic protozoans belonging to the *Plasmodium* type. It is a mosquito-borne disease that infects people and animals. Symptoms include fever, fatigue, vomiting and headache. If not treated, it can lead to seizures, coma and eventually death.[390] Lawrence Angel first recognized that lesions on the cranial vault and along the bones of skeletal remains were actually indicators of certain types of hereditary anaemia (thalassemia). The frequency of this type of anaemia in a population is a sign of malaria since people who suffer from thalassemia acquire a certain form of resistance to this disease.[391]

The most dangerous form of malaria, caused by the *Plasmodium falciparium* parasite, also known as Quartan fever, spread across the Mediterranean during Antiquity.[392] Egyptian Ebers Papyrus suggests the existence of malaria. Archaeological evidence comes from mummies with enlarged spleens, one of the symptoms of the disease.[393]

For a long time, scientists believed malaria spread through ancient Greece in the 5th century BCE, or that it spread across the Mediterranean only during the Roman Empire. But genetic research confirmed that thalassemia spread across the Mediterranean in the 8th century BCE as a kind of defence against malaria. This expansion of thalassemia can be connected with early phases of Greek colonization.[394]

Eventually, there were fewer outbreaks of malaria, primarily due to improved conditions in agriculture (draining of marshes) and changes in sea level. Hippocrates also noticed the link between the outbreaks of malaria and an environment with lots of marshes. Despite this realization, ancient

386 Austin Alchon (2003: 21)
387 Wiechmann (2005: 48–55)
388 Justinian, Edict IX.3; Cameron (1993: 111)
389 Manger (2005: 162)
390 WHO (2010: xi)
391 Angel (1971: 77–84)
392 King (2005: 17)
393 Hume (2010: 181)
394 King (2005: 18)

S vremenom je izbijanje malarije ograničeno, ponajprije zbog poboljšanih uvjeta u poljoprivredi (isušivanje) i promjene u razini mora, a već je za Hipokratovog vremena uočena povezanost između izbijanja malarije i močvarnog okoliša. Ipak, antički su se liječnici često borili protiv nje.[395] Ova je epidemija dovodila do kroničnih podbačaja u poljoprivrednoj proizvodnji što je cijele zajednice izložilo pothranjenosti, gladi i povećavalo šanse za druge bolesti. Malariju se često krivi da je najveći ubojica u ljudskoj povijesti, s obzirom na to da uzročnik malarije nije otkriven do 19. st.[396]

Malarija se pokazala vrlo otpornom bolesti te je u razdoblju Rimskog Carstva bila toliko česta da su je nazivali i rimskom groznicom.[397] Najpoznatiji je rimski pisac o poljoprivredi, Kolumela, dovodio pojavu malarije u vezu s insektima močvara i neisušenih površina.[398] Cijela područja Carstva bila su poznata po učestalosti izbijanja malarije, posebice dijelovi južne Italije, Sardinija, dijelovi obalne Etrurije te sam grad Rim zbog blizine Tibera. Pontijske močvare, područje vlažnih šuma u rimskoj Kampaniji bilo je do te mjere zaraženo malarijom da su nestajala cijela sela i gradovi.[399] Rimljani su još 160. g. pr. Kr. pokušali isušiti to zaraženo područje, ali bezuspješno. Malarija je ostala endemska bolest na tom području sve do 30-ih godina 20. st.[400] Malarija je vjerojatno potaknula ekonomsko propadanje određenih dijelova Carstva u kasnoj antici te se izbijanje malarije tijekom 5. st. dovodi u vezu sa samim slomom Zapadnog Rimskog Carstva.[401]

Rimski su se liječnici i pisci borili s dugotrajnom bolešću. Samo *De Materia Medica* Pedanija Dioscorida donosi niz lijekova i pripravaka za liječenje otekle slezene što je jedan od simptoma malarije.[402] Plinije Stariji kao lijek spominje kozju krv otopljenu u bijelom vinu te navodi vjerovanje prema kojem, kao zaštitu od malarije; oboljelom treba ponuditi žabu krastaču.[403]

Devastirajuće posljedice koje ova bolest može imati, ilustrira nalaz kasnoantičkog groblja iz sredine 5. st. s lokaliteta Poggio Gramignano, pokraj Lugana, s područja Umbrije. Ukupno je pronađeno 47 dječjih grobova ukopanih tijekom kratkog vremenskog razdoblja od svega par mjeseci. DNA analize osteoloških ostataka potvrdile su malariju kao uzrok tako velike smrtnosti.[404]

Sl. 68. Dvije posve jednostavne brončane ušne sonde. (Sisak, 1. – 4. st., K126 – 127)
~ Fig. 68 Two simple bronze ear probes. (Sisak, 1st – 4th c., K126 – 127)

Sl. 69. Ušne sonde mogu biti i sasvim jednostavnog oblika bez ukrasa, prikazani primjerci su izrađeni od srebra. (Sisak, 1. – 4. st., K112 – 121)
~ Fig. 69 Ear probes can be simple, without decoration, like these examples made of silver. (Sisak, 1st – 4th c., K112 – 121)

physicians often had to deal with the disease.[395] This epidemic led to chronic shortages in agricultural production as whole communities experienced malnutrition, hunger and increased susceptibility to other diseases. Malaria is often blamed as the deadliest killer in human history since its cause was not discovered until the 19th century.[396]

Malaria had proven to be a very resilient disease and its outbreaks were so frequent during the Roman Empire that it was also called the Roman fever.[397] Columella, the most famous Roman writer on agriculture, associated malaria with marsh insects and un-drained areas.[398] Some areas of the Empire were known for frequent outbreaks of malaria, in particular parts of southern Italy, Sardinia, coastal Etruria and the city of Rome, because of the proximity to the river Tiber. Pontic marshes, area covered with forests in Roman Campania was so infested with malaria that entire villages and cities disappeared.[399] Romans tried to drain the infected area as early as 160 BCE, but to no avail. Malaria remained in this area until the 1930s.[400] Malaria seems like a plausible culprit for the economic decline of certain parts of the Empire in late Antiquity. The outbreak of malaria during the 5th century CE is sometimes associated with the very collapse of the Western Roman Empire.[401]

Roman physicians and writers have struggled with this stubborn illness. Pedanius Dioscorides' *De Materia Medica* mentioned a number of drugs and remedies for treating the enlarged spleen, one of the symptoms.[402] According to Pliny the Elder, honeysuckle mixed with white wine should be taken for malaria, and a toad should be offered as protection to the person suffering from the disease.[403]

Devastating consequences of this disease can be seen in the remains from the late Roman cemetery from the mid-5th century CE on the site of Poggio Gramignano, near Lugano, in Umbria. Graves of 47 children were found buried in just a few months. DNA analysis of skeletal remains confirmed malaria as the cause of such a large number of deaths.[404]

395 Sam je Hipokrat opisao stadije malarijske groznice prema danima, u kojima je najjači tercijarni i kvartarni.
~ Hippocrates described the stages of the malarial fever according to days on which the fever was strongest: tertiary and quartary. Hippocrates. Of the epidemics (13. 12. 2016.); Pappas et al. (2008: 347–350)

396 Prvi značajni pomak u liječenju malarije učinjen je 1880. g. kada je francuski liječnik Charles Louis Alphonse Laveran u crvenim krvnim zrncima zaraženih otkrio parazita i identificirao ga uzročnika malarije. Godinu dana kasnije potvrđeno je da komarci prenose novootkrivenog parazita.
~ The first significant breakthrough in the treatment of malaria was made in 1880, when a French doctor Charles Louis Alphonse Laveran discovered and identified the causative agent of malaria in red blood cells infected with the parasite. A year later, it was confirmed that mosquitoes transmitted the newly discovered parasite. Manger (2005: 103)

397 Sallares (2002: 174)

398 Columella, De re rustica.; Strong (1944:3);

399 Pliny. Natural History. III.V.59

400 Brunt (1971: 618–624)

401 Sallares, Gomzi (2001: 203)

402 Dioscorides. De Materia Medica. xxvi

403 Pliny. Natural History. XXVII.XCIV.120, XXII.49

404 Među ukopanim tijelima ima najviše abortiranih fetusa, zatim nedonoščadi, dok najstarije dijete ima najviše tri godine.
Among the buried bodies the most numerous were aborted fetuses and premature infants. The oldest child buried was three years old.
404 Soren (2010: 197–200)

LEPRA

Bolest koja se učestalo spominje u antičkim izvorima je lepra tj. guba. Često se u antici pojam lepra odnosio na bilo koju kožnu bolest, s obzirom na to da termin dolazi od grčke riječi Λέπρα koja označava kožu koja se ljuska (guli). Više nego kod bilo koje poznate bolesti, kod lepre postoji razlika između onoga za što se riječ koristila i pravog medicinskog značenja bolesti, za koju se danas koristi medicinski termin Hansenova bolest. Termin gubavac još uvijek pogrdno označava osobu koja je izopćena iz društva, ne samo zbog bolesti nego zbog bilo kojeg razloga.

Hansenova bolest zarazna je bolest koju uzrokuje bakterija *Mycobacterium leprae* ili *Mycobacterium lepromatosis*. Od inicijalne zaraze bakterijom do prvih simptoma može proći od pet do dvadeset godina. Među simptome lepre ubrajamo granulaciju živaca, posebice ruku, nogu i lica, pojavljuju se lezije na kojima se gubi osjet boli, a može uzrokovati sljepoću i oduzeti sposobnost pomicanja ruku i očnih kapaka. Kako su osjeti za hladnoću, toplinu i bol oslabljeni, rane na ekstremitetima se mogu inficirati, što dovodi do nekroze ekstremiteta.[405] Lepra se prenosi između ljudi preko tjelesnih tekućina, kašljanjem i kihanjem, ali suprotno vjerovanju, nije jako zarazna.[406] Hoće li će se osoba izložena lepri razboljeti, ovisi, prije svega, o njezinom imunološkom sustavu.

Lepra se u antičkim izvorima spominje nebrojeno puta, ali je gotovo nemoguće na temelju opisanih simptoma zaključiti je li uvijek riječ o istoj bolesti. Termin se najčešće koristi za bilo koju kroničnu kožnu bolest, poput vitiliga, psorijaze ili raka kože.[407] Brojni su babilonski, egipatski i hebrejski izvori koji spominju lepru od 8. st. pr. Kr. nadalje. Mnogi autori smatraju da je još Hipokrat prepoznao lepru u 5. st. pr. Kr. Prvo djelo posvećeno lepri pripisuje se Demokritu, koji je za bolest upotrijebio naziv elefantijaza (zbog ogrubljivanja i zadebljanja kože koje ju prati).[408] Od rimskih autora lepru spominju Plinije Stariji, Celzus, Galen i Celije Aurelijan.[409] Kao lijek za lepru ili gubu u antici se preporučala krv, kao piće i u obliku kupki, te zmijski otrov.[410] Slavnom se Arhagatu pripisuje izum posebne pomade protiv lepre.

Genetskim je istraživanjem otkriveno da se bolest najprije javila u istočnoj Africi i na Bliskom istoku te se širila migracijom ljudi i trgovačkim rutama. Bolest je potvrđena na skeletima pokojnika u Egiptu iz 2. st. pr. Kr i na tijelu pokojnika iz blizine Jeruzalema iz 1. st. po. Kr.[411]

Bez obzira na to koristi li se termin lepra za pravu manifestaciju Hansenove bolesti ili za neku drugu bolest sličnih simptoma, bolest se tijekom antike smatrala vrlo zaraznom pa je društvo oboljele vrlo često izoliralo i odbacivalo. Vanjska obilježja bolesti jasno su izdvajala oboljele od zdravih. Na lepru se često gledalo kao na kaznu bogova, a takav je stav samo pojačan u srednjem vijeku, u kojem se smatralo da su gubavci kažnjeni ovom bolešću za svoje grijehe.

Sl. 70. Osim brončanih, željeznih i srebrnih ušnih sondi u Zbirci se nalaze i koštane ušne sonde. (Sisak, 1. – 4. st., K122 – 125)
~ Fig. 70 Apart from bronze, iron, and silver ear probes, the Collection contains ear probes made of bone. (Sisak, 1st – 4th c., K122 – 125)

LEPROSY

The disease frequently mentioned in ancient sources is leprosy. In Antiquity, the term "leprosy" was used for any skin disease because it comes from the Greek word Λέπρα, meaning skin that peels. There is a significant difference between what the word was used for and the real medical condition that we today call Hansen's disease. To this day, the term leper is used derogatory for a person who is an outcast from society for any number of reasons, not only because of disease.

True leprosy (Hansen's disease) is an infectious disease caused by the bacteria Mycobacterium leprae and *Mycobacterium lepromatosis*. Five to twenty years can pass between the initial infection and the first symptoms. Some of the symptoms of leprosy are granulomas of the nerves, especially on the arms, legs and face. It can lead to a lack of ability to feel pain. It can cause blindness, and take away the ability to move arms and eyelids. As the sensation for cold, heat and pain weakens, wounds on the extremities become infected, leading to necrosis associated with leprosy.[405] Leprosy is transmitted through bodily fluids, coughing and sneezing, but contrary to popular belief, it is not very contagious.[406] Whether the person exposed to leprosy will get sick depends primarily on the immune system.

Leprosy is frequently mentioned in ancient sources, but based on the described symptoms, it is almost impossible to know if it is always the same disease. The term was often used for any chronic skin disease such as vitiligo, psoriasis or skin cancer.[407] Babylonian, Egyptian and Hebrew sources start to mention leprosy in the 8th century BCE. Many authors believe that Hippocrates diagnosed leprosy in the 5th century BCE. The first work devoted to leprosy is attributed to Democritus who used the name elephantiasis (due to the skin thickening that accompanies it).[408] Roman authors, Pliny the Elder, Celsus, Galen and Caelius Aurelianus wrote about leprosy.[409] In antiquity, drinking or bathing in blood was used as a treatment, along with snake venom.[410] Argachat is credited with inventing a special lotion against leprosy.

Genetic research has revealed that leprosy first emerged in East Africa and the Middle East and spread with migrating populations and along trade routes. The disease was confirmed on the skeletons in Egypt from the 2nd century BCE, and the deceased found in the vicinity of Jerusalem from the 1st century CE.[411]

Whether the term leprosy was used for Hansen's disease, or any other disease with similar symptoms, it was considered highly contagious during Antiquity and those infected were often isolated and shunned by society. External manifestations of leprosy clearly distinguished the sick from the rest of the population. Leprosy was often seen as punishment from the gods, and this attitude only intensified during the Middle Ages, when it was believed that lepers were punished for their sins.

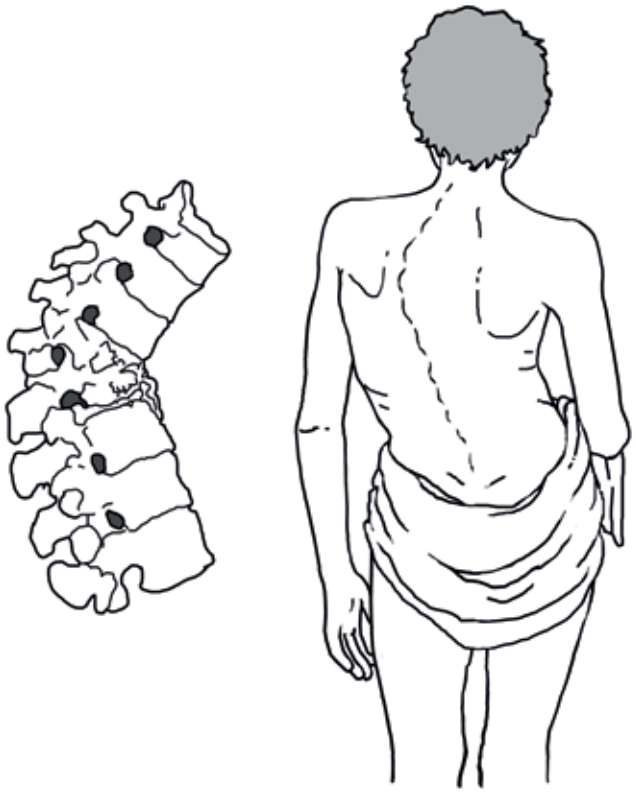
405 WHO. Leprosy Fact sheet N°101. (27. 11. 2016.)
406 Suzuki et al. (2012: 121–129)
407 Manger (2005: 184)
408 Diels , Kranz (1952: 215–216)
409 Caelius Aurelianus. Chronic Diseases 4.13.; Adams (1846)
410 Demaitre (2007: 268)
411 Manchester (1984: 168); The Hebrew University of Jerusalem. DNA of Jesus-era shrouded man in Jerusalem reveals earliest case of leprosy. (25. 11. 2016.)

TUBERKULOZA

Jedna od zaraznih bolesti koja ostavlja tragove na ljudskom kosturu, te je možemo uočiti još od prapovijesti, je tuberkuloza. Poznata je i kao bijela kuga. Tuberkulozu uzrokuje bakterija *Mycobacterium tuberculosis* koja se prenosi zrakom, najčešće kašljem i kihanjem. Smatra se da je trećina svjetskog stanovništva zaražena sojem spomenute bakterije, ali ona iz latentne zaraženosti prelazi u aktivnu samo kod 10% zaraženih, najčešće zahvaćajući pluća, a ako se ne liječi, u oko 50% slučajeva je smrtna.[412] Najčešći simptomi su mokri kašalj (s čestom pojavom iskašljavanja krvi, koja se simbolično veže uz bolest), vrućica, noćno znojenje i gubitak tjelesne težine.[413]

U 15 do 20% oboljelih bolest se širi s pluća na druge unutarnje organe, posebice na prostor prsnog koša, limfni sustav, centralni živčani sistem te na kosti i zglobove.[414] Kada se proširi na kostur, poznata je pod nazivom tuberkuloza kostiju, te predstavlja vrstu osteomijelitisa, infektivne upale kostiju i koštane moždine.[415] Tuberkuloza kostiju najčešće zahvaća kralješnicu, preciznije, predio nižih prsnih i viših lumbalnih kralješaka te se taj oblik naziva Pottovom bolešću.[416] Najstariji ljudski ostaci kod kojih je potvrđeno postojanje bakterije *Mycobacterium tuberculosis* datiraju se u doba neolitika, u razdoblje oko 4000 g. pr. Kr.[417] Nalazi kostiju kralješnice zaraženih tuberkulozom potječu i s neolitičkog groblja kod Heidelberga u Njemačkoj.[418] Istraživanja na egipatskim mumijama dokazuju pojavljivanje tuberkuloze od vremena Starog kraljevstva (3000. – 2400. g. pr. Kr.), također ju spominje *Papirus Ebers*.[419]
Tuberkuloza je bila poznata i liječnicima stare Grčke koji su za bolest često upotrebljavali naziv *phthisis* (grč. Φθισις). Termin se u literaturi pojavljuje sredinom 5. st. pr. Kr. Prvi je spominje Herodot u svojoj *Povijesti* gdje navodi da je perzijski general odustao od kampanje protiv Sparte zbog pojave bolesti.[420] Opis bolesti nalazimo u *Epidemijama I*, raspravi Hipokratovog korpusa gdje se navode simptomi bolesti poput vrućice, gubitak želje za hranom i pićem te kašalj i delirij koji nastupa prije smrti. U *Aforizmima*, drugom djelu Korpusa, primijećeno je da tuberkuloza najčešće zahvaća osobe između 18 i 35 godina starosti te da je njezin ishod gotovo uvijek fatalan.[421] Mnogi liječnici Hipokratovog vremena vjerovali su da je bolest nasljedna.

Od rimskih pisaca, tuberkulozu opisuje Plinije Stariji u pismu Prisku, a od simptoma spominje vrućicu, opću nemoć i kašalj.[422] Vitruvije je primijetio da se bolest češće javlja u područjima u kojima pušu sjeverni vjetrovi, te je savjetovao da se zidovi kuća pri gradnji orijentiraju tako da zaštite stanovnike od udara vjetra.[423] Galen je opisao izgled pluća kod zaraženog bolesnika. Navodi da bolest uzrokuje pojavu čireva na području pluća, ždrijela i grla te propisuje niz terapeutskih postupaka za ublažavanje simptoma, između ostalog i opijum, puštanje krvi i posebnu prehranu koja se sastoji od raži, ribe i voća.[424]



Sl. 71. Tuberkuloza bi često zahvatila područje kralježnice i uzrokovala njezinu vidljivu deformaciju.
~ Fig. 71 Tuberculosis can spread to bones, like the spine, and cause deformations.

TUBERCULOSIS

One of the infectious diseases that leaves a mark on human bones, and has been well known since prehistoric times is tuberculosis. Also known as the "White plague", tuberculosis is caused by bacteria *Mycobacterium tuberculosis* transmitted between individuals by air, usually by coughing and sneezing. It is believed that one third of the world's population is infected with a strain of the bacterium, but the latent infection becomes active only in 10% of the infected. It usually affects the lungs, if left untreated it is fatal in about 50% of cases.[412] The most common symptoms are wet cough (often coughing up blood, which is symbolically associated with the disease), fever, night sweats and weight loss.[413]

In 15 to 20% of patients, the disease spreads from the lungs to other internal organs; in particular it affects the chest area, lymphatic system, central nervous system as well as bones and joints.[414] When it affects the skeleton, it is known as tuberculosis of bones and is actually a type of osteomyelitis, an infectious inflammation of bones and bone marrow.[415] Tuberculosis usually affects the spine, more precisely, the lower thoracic and upper lumbar vertebrae in which case it is called Pott disease.[416]

The oldest human remains showing traces of *Mycobacterium tuberculosis* date back to the Neolithic, around 4000 BCE.[417] The bones of the spine infected with tuberculosis were found at the Neolithic graveyard at Heidelberg in Germany.[418] Research on Egyptian mummies has proven the occurrence of tuberculosis during the Old Kingdom (3000 – 2400 BCE), and the disease was also mentioned in the famous medical *Ebers Papyrus*.[419]

412 WHO. Tuberculosis. (11.02.2016.)
413 CDC. Basic TB Facts. (11.02.2016.); WHO.
414 Tuberculosis Fact sheet N°104. (11.02.2016.); Golden, Vikram (2005: 1761–1768)
415 Kumar et al. (2007: 810–811)
416 WHO. Extrapulmonary Tuberculosis. (11.02.2016.)
417 Neke DNA studije osteološkog materijala navode da se uzročnika tuberkuloze može pronaći i ranije, oko 9000.g.pr.Kr. Istraženi materijal pripada razdoblju samog početka neolitika na istočnom Mediteranu. Riječ je o osteološkom materijali s nalazišta Altit-Yam, nedaleko od Haife u Izraelu.
~ Some DNA studies of skeletal remains indicate that bacteria causing tuberculosis can be found earlier, around 9000 BCE. Analyzed material dates back to the beginning of the Neolithic period in eastern Mediterranean. This is the osteological material from the Altit-Yam site, in vicinity of Haifa in Israel. Hershkovitz et al. (2008)
418 Madkour, Warrell (2004: 3)
419 Postoji sumnja da su faraon Ekhnaton i njegova žena Nefertiti zapravo umrli od tuberkuloze.
~ Some suspect that Pharaoh Akhenaten and his queen Nefertiti actually died of tuberculosis.
Madkour i Warrell (2004: 11–12)
420 Herodot. Povijest. 8. 88
421 Hippocrates. Aphorisms 5.9 i 5.11; Of the Epidemics 1, 2
422 Pliny. Letters. 7.19
423 Vitruvije. Deset knjiga o arhitekturi. 1.6.3
424 Pease (1940: 380–393)

EPILEPSIJA ILI SVETA BOLEST

S obzirom na to da je kroz čitavu antiku bilo rašireno vjerovanje kako je uzrok zaraznih bolesti kazna bogova, ovdje ćemo se ukratko osvrnuti na određene bolesti koje, iako ne spadaju u zarazne bolesti, prema antičkom poimanju svijeta imaju istog uzročnika — bogove.

Da su se već stari grčki liječnici i filozofi bavili psihičkim poremećajima i oboljelima svjedoči širok vokabular vezan uz ponašanje koje im se pripisuje, te brojni termini koji se povezuju s takvim poremećajima.[425] Tradicionalno su se psihička oboljenja povezivala s nadnaravnim, takva bolest je bila kazna ili pak nadahnuće poslano od bogova. S pojavom Hipokratove medicine, psihičke se poremećaje pokušava objasniti kao i druge fizičke bolesti i pridodaje im se prirodan uzrok. Sva se oboljenja objašnjavaju u terminima disbalansa tjelesnih tekućina, pa tako i ona psihička. Dio tih stavova biti će ilustriran kroz jedan, u antici često opisivan, poremećaj — epilepsiju.

Danas je apsolutno jasno kako epilepsija ne spada u psihičke poremećaje. Današnja medicina pod epilepsijom shvaća grupu neuroloških poremećaja koju karakteriziraju epileptički napadaji, nekontrolirano grčenje i tresenje tijela različitog intenziteta i trajanja.[426] Napadaji nastaju zbog pretjerane i abnormalne moždane aktivnosti u cerebralnom korteksu. Uzrok takve abnormalne aktivnosti može biti višestruk i u mnogim slučajevima nije siguran (fizičko oštećenje mozga, tumori, moždani udar, infekcije ili genetska oboljenja).[427]

Termin epilepsija dolazi od grčke riječi επιλαμβάνειν, koja znači stisnuti, obuzeti, napasti. Mezopotamski i egipatski pisani izvori spominju bolest od kraja 3. tisućljeća pr. Kr. Sama se bolest prvi put opisuje u tekstu napisanom oko 2000. g. pr. Kr. Smatralo se da je oboljela osoba pod utjecajem mjesečevog božanstva pa je nad njom vršen egzorcizam. I Babilonci su smatrali da su oboljele zapravo obuzeli demoni i zli duhovi, stoga su i samu bolest pokušavali liječiti na duhovni način. Detaljan opis simptoma epilepsije, tretmana i moguće prognoze donosi babilonski medicinski tekst iz 11. st. pr. Kr.[428] Hamurabijev zakon također spominje epilepsiju u kontekstu trgovine robljem, kao opravdan razlog zbog kojeg se kupljenog roba može vratiti.[429]

Do pojave Hipokratovog nauka antički su Grci uzrok bolesti vidjeli u božanskom, što govori i ime koje su joj nadjenuli, sveta bolest (grč. ἡ ἱερα νόσος).[430] Naziv sveta bolest prvi se put spominje kod filozofa Heraklita i povjesničara Herodota.[431] Epilepsija je podjednako mogla biti poslana kao kazna od bogova za neki prijestup, ali i kao oblik božanskog nadahnuća. U mitologiji je epilepsija bila povezana s božicama Artemidom i Selenom (boginja mjeseca), koje su je koristile kao kaznu za one koji su ih ozlovoljili.

Revolucionarna promjena promišljanja karaktera bolesti dolazi s Hipokratom i njegovim nasljednicima. Cijela rasprava Hipokratovog korpusa, *O svetoj bolesti*, posvećena je epilepsiji.[432] Za autora rasprave mozak je na-

Tuberculosis was known to ancient Greece physicians who often called it *phthisis* (Φθισις). The term was used in literature in the mid-5th century BCE. It was first mentioned by Herodotus in his *History* where he retold the story of a Persian general who gave up the campaign against Sparta because of the outbreak of the disease.[420] A description of tuberculosis can be found in *Epidemics*. Other works of the Hippocratic Corpus cited symptoms such as fever, loss of appetite, coughing and delirium that occurs before death. *Aphorisms*, one of the treatises in the Corpus, noted that tuberculosis usually affected people between 18 and 35 years of age, and that the outcome was almost always fatal. Many physicians in Hippocrates' time believed that the disease was hereditary.

Among Roman writers, tuberculosis was described by Pliny the Elder in his letter to Priscus. Pliny mentioned fever, general weakness and coughing as symptoms of the illness.[422] Vitruvius noted that the disease was more common in areas affected by northern winds, and advised that the walls of houses should be oriented so as to protect the inhabitants from gusts of wind.[423] Galen described the lungs of infected patients, and stated that the disease caused ulcers in the lungs, pharynx and larynx. He provided a number of therapeutic methods to alleviate the symptoms, including opium, bleeding, and a special diet consisting of rye, fish and fruit.[424]

EPILEPSY OR SACRED DISEASE

Given that throughout Antiquity infectious diseases were thought to be punishment from the gods, here we will briefly talk about a certain disease that although not infectious had the same divine cause according to ancient concepts.

An extensive vocabulary related to the behaviour attributed to mental disorders and those suffering from them, as well as a number of terms that were linked to such disorders, is evidence that ancient Greek physicians and philosophers dealt with them.[425] Traditionally, mental disorders were associated with the supernatural, such a disease was punishment or inspiration sent by the gods. With the rise of the Hippocratic medicine, mental disorders were explained in the same manner as other physical illnesses and were assigned natural causes. All illnesses were explained in terms of a humoral imbalance. Some attitudes toward mental disorders will be illustrated through epilepsy or the Sacred disease, as it was often called. It was a frequently described disorder in Antiquity.

Today, we know that epilepsy is not a mental disorder. Under the term epilepsy, modern medicine sees a group of neurological disorders characterized by seizures, uncontrollable twitching and shaking of varying intensity and duration.[426] Seizures occur because of excessive and abnormal brain activity in the cerebral cortex. Causes for such abnormal activity can be multiple and in many cases are not certain (physical damage to the brain, tumours, stroke, infection or genetic diseases).[427]

The term comes from the Greek word *ἐπιλαμβάνειν*, meaning to squeeze, seize, attack. Mesopotamian and Egyptian written sources mention the disease at the end of the 3rd millennium BCE. It was first described in the text written around 2000 BCE. It was believed that the infected person was under the influence of the lunar deity and that an exorcism should be performed. Babylonians believed that those suffering from epilepsy were actually possessed by the devil or evil spirits so they tried to treat the disease in a spiritual way. A detailed description of symptoms, treatment and possible prognosis was recorded in the Babylonian medical text from the 11th century BCE.[428] The law of Hammurabi also mentions epilepsy in the context of the slave trade. Leprosy was a legitimate reason for the purchased slaves to be returned.[429]

Before Hippocrates, ancient Greeks believed epilepsy had a divine cause evident in the name that they bestowed upon it, the Sacred disease (Ἡ ἱερὰ νόσος).[430] The term Sacred disease was first mentioned by Heraclitus, a

425 Harris (2013: 1)
426 Chang, Lowenstein (2003: 1257–1266); WHO. Epilepsy Fact sheet. (28. 11. 2016.)
427 Pandolfo (2011: 506–518); Longo (2012: 3258)
428 Horstmanshoff, Stol (2004: 661–663)
429 Magiorkinis et al. (2010: 103–108)
430 WHO. Epilepsy: historical overview. (29. 11. 2016.)
431 Temkin (1971)
432 Mnoge druge rasprave u Korpusu spominju ili epilepsiju kao bolest ili epileptične napadaje, ali se, uz O Svetoj bolesti, samo O disanju bavi detaljnim opisom simptoma. ~ Many other treatises in the Corpus mention epilepsy or epileptic seizures, but only On Sacred Disease and On Breaths deal with a detailed description of the symptoms.
432 Harris (2013: 1)

jvažniji dio tijela, onaj koji upravlja ostatkom tijela i interpretira što se s tijelom događa, a uzrok bolesti objašnjava se u okviru prevladavajuće medicinske misli tog doba – teorije o tjelesnim tekućinama.[433] Upravo se taj pomak prema racionalnom objašnjavanju bolesti smatra jednim od većih koraka u razvoju rane medicinske misli.[434]

Stav običnih Rimljana prema epilepsiji nije se bio drugačiji od stava Grka u Hipokratovo vrijeme. Oboljeli su se smatrali nečistima, zaraznima te su bili predmet straha i prezira. O tome da je bolest i za vrijeme Rimskog Carstva bila stigmatizirana, govori nam podatak kako su Rimljani izbjegavali koristiti isto posuđe kao i oni koji pate od napadaja. Raširen je bio i običaj pljuvanja kada bi se ugledalo epileptičara, koji spominje Plinije.[435]

ANTIČKI LIJEKOVI ZA EPILEPSIJU

Prosvijećen stav Hipokrata i njegovih sljedbenika prema epilepsiji i psihičkim poremećajima nije se, nažalost, odrazio i na tretmanima koje su antički liječnici prepisivali kao lijek za te bolesti. Za epilepsiju su se često nudili potpuno nedjelotvorni lijekovi i postupci poput puštanja krvi, kauterizacije, pa sve do trepanacije i histeroktomije.[436] Empiricist Serapion iz Aleksandrije u svojim zapisima, kao potencijalne lijekove za epilepsiju, navodi devinu krv i jetru, srce kunića, krv morske kornjače i krokodilov izmet.[437] Još egzotičnijim lijekovima pripadaju ispijanje vlastite krvi ili krvi mrtvog gladijatora. Iako su veliki medicinski umovi antike žestoko kritizirali uporabu gladijatorske krvi u liječenju epilepsije, posebice Galen, još se stoljećima ona spominje kao provjeren lijek protiv napadaja.[438]

Sl. 72. Cilindrična olovna kutijica s reljefnim pečatom izvedenim s vanjske strane dna. (Sisak, 1. – 4. st., K62)
~ Fig. 72 Cylindrical lead box with a relief workshop stamp on the exterior of the bottom. (Sisak, 1st – 4th c., K62)

Sl. 73. Gema izrađena od sardoniksa prikazuje Herakla s toljagom u ruci i prebačenom lavljom kožom. U antici se epilepsija često nazivala Heraklovom bolešću. (Kostolac, 1. – 4. st., K8)
~ Fig. 73 Sardonyx gem depicting Hercules holding a club and lion's skin. In classical antiquity, epilepsy was often called "the disease of Hercules". (Kostolac, 1st – 4th c., K8)

philosopher, and Herodotus, a historian.[431] Epilepsy could equally have been sent as punishment for some transgression, but also as a form of divine inspiration. In mythology, epilepsy was associated with the goddesses Artemis and Selene (Moon goddess) who used it as punishment for those who annoyed them.

The revolutionary changes in thinking about this disease came with Hippocrates and his successors. *On Sacred Disease*, a whole treatise in the Hippocratic corpus written around 400 BCE, was dedicated to epilepsy.[432] For the authors, the brain was the most important part of the body, the one that controlled everything and interpreted what was happening. The cause of epilepsy was explained in the context of the prevailing medical theory of the time — humorism.[433] This shift toward a rational explanation of the diseases is considered to be one of the major steps in the development of early medical thinking.[434]

The attitude of ordinary Romans towards epilepsy was similar to the Greek attitude at the time of Hippocrates. Patients were considered unclean, contagious and were feared and subjected to contempt. We can clearly see epilepsy was stigmatized during the Roman Empire since Romans avoided using the same dishes as those who suffered from seizures. As Pliny mentioned, the custom of spitting on people suffering from epilepsy was quite common.[435]

ANCIENT RECIPES FOR CURING EPILEPSY

The enlightened attitude of Hippocrates and his followers towards epilepsy and mental disorders was not, unfortunately, reflected in the treatments ancient physicians prescribed as a cure for the disease. Often completely ineffective drugs and procedures were offered in cases of epilepsy. Those include bloodletting, cauterization, trepanation and hysterectomy.[436] Empiricist Serapion of Alexandria suggests camel's blood and liver, rabbit's heart, sea turtle's blood and crocodile's excrement as potential remedies for epilepsy.[437] Drinking of one's own blood or the blood of dead gladiators was among the more exotic treatments. Although the great medical minds of Antiquity, especially Galen, strongly criticized the use of gladiator's blood, it was mentioned as a proven remedy against seizures for centuries.[438]

433 Gubitak kognitivnih funkcija i ostali fizički simptomi koji prate epilepsiju nastaju kada dolazi do akumuliranja sluzi u žilama koje spajaju mozak s tijelom. Sluz u žilama sprječava slobodan protok "tjelesne tekućine" koja je odgovorna za raznošenje "svijesti". Za autora O svetoj bolesti ta tekućina je zrak, a za autora O disanju krv. Autori rasprava smatraju epilepsiju nasljednom. Ističu kako oboljeli često skrivaju napadaje zbog srama i stigme koju bolest nosi.
~ The loss of cognitive functions and other physical symptoms accompany epilepsy with the accumulation of phlegm in the veins that connect the brain and the body. The phlegm in the veins prevents the free flow of "bodily fluids", which is responsible for the delivery of "consciousness". For the author of On Sacred Disease that humor is air, and for the author of On breathing blood. Authors consider the epilepsy to be hereditary. They state that patients often hide seizures out of shame and stigma that goes with the disease.
Hippocrates. On the Sacred Disease; Manger (2005: 184); Harris (2013: 198–199)

434 Farrington (1966: 64–66); Lloyd (1987: 26–29)

435 Pljujući na oboljelog, tjeralo bi se zarazu natrag njemu.
~ Spitting on the the diseased drove the illness away.
Pliny. Natural History. XXVIII, 35

436 Temkin (1971: 73)

437 Serapion Aleksandrijski (3. st. pr. Kr.), grčki liječnik, pripadnik empiričkog medicinskog pravca. Bio je protivnik Hipokratovog učenja. Njegova djela sačuvana su nam samo u fragmentima.
~ Serapion of Alexandria (3rd century BCE), Greek physician, a member of the Empiric school of medicine. He opposed the Hippocratic teachings. His works have been preserved only in fragments.
Deichgraber (1965: fr. 146); Nutton (2004: 150)

438 Celsus. De Medicina. 3, 23, 7; Temkin (1971: 125)

RAZVOJ LJEKARNIČKOG UMIJEĆA U GRČKOJ I RIMU
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HISTORY OF PHARMACY IN ANCIENT GREECE AND ROME

Povijest ljekarništva duga je, vjerojatno, kao i povijest čovječanstva. Naši su predci upotrebljavali sastojke biljnog i životinjskog podrijetla kako bi izazvali različite fiziološke promjene i liječili bolesti. Nalazi koji potvrđuju poznavanje i uporabu ljekovitih biljaka datiraju u vrijeme neandertalaca. Rezultati znanstvenih analiza pokazali su da su neandertalci kuhali i obrađivali biljke te da su konzumirali biljke gorkog okusa, poput kamilice, koje imaju određena ljekovita svojstva.[439] Osim toga, analize zemlje iz neandertalskog groba pronađenog u špilji Shanidar u sjevernom Iraku potvrđuju da su neandertalci poznavali i ljekovite biljke poput stolisnika (*Achillea*) i različka (*Centaurea cyanus*).[440] Uz paleolitičke nalaze, nalazi iz vremena neolitika svjedoče o upotrebi psihoaktivnih supstanci i narkotika poput alkohola, kanabisa i maka, ali ne možemo biti sigurni jesu li te biljke korištene u medicinske ili neke druge svrhe.[441]

Sprega arheologije i suvremene znanosti može nam rasvijetliti najraniju medicinsku upotrebu biljaka i životinja, ali pri donošenju konačnih zaključaka trebamo biti vrlo oprezni. Tek s pojavom pisanih izvora koji spominju medicinske primjene različitih supstanci, možemo biti sigurniji u našoj interpretaciji. Među najranije takve dokumente zasigurno spadaju i već spomenuti, babilonski zapisi, koji navode mnoge biljne i životinjske pripravke koji se koriste u liječenju širokog spektra bolesti.[442] Informacije sadržane u tim zapisima, vjerojatno su rezultat prikupljanja i bilježenja djelovanja različitih sastojaka na ljudski organizam, koji sežu još od neolitika.[443] Među rane zapise o različitim farmakološkim supstancama ubrajamo i egipatske medicinske tekstove, od kojih je najpoznatiji i najdulji *Papirus Ebers* koji sadrži recepte za više od 700 lijekova i drugih medicinskih pripravaka.[444]

Sl. 74. Jedno od glavnih pomagala ljekarnika zasigurno su bile i žličice koje najvećim brojem imaju okrugli recipijent, a izrađene su od različitih materijala. (Sisak, 1. – 4. st., K183 – 190)
~ Fig. 74 Spoons were probably one of the main tools in pharmacy. They usually had round recipients and were made of different materials. (Sisak, 1st – 4th c., K183 – 190)

The history of pharmacy is probably as long as the history of mankind. Our ancestors used ingredients of plant and animal origin to induce a variety of physiological changes and treat illnesses. Archaeological finds confirm that knowledge and use of medicinal plants date back to the Neanderthals. Results of scientific analysis have shown that Neanderthals cooked and cultivated plants.[439] They also consumed some plants that have a bitter taste, for example chamomile, but also possess certain medicinal properties. Soil analysis of the Neanderthal grave discovered in the Shanidar cave in northern Iraq has confirmed that Neanderthals used herbs like yarrow (*Achillea*) and cornflower (*Centaureacyanus*).[440] Finds from the Palaeolithic and Neolithic periods confirm the use of psychoactive substances and narcotics, such as alcohol, cannabis and poppy, but we cannot be sure whether these plants were used for medicinal or some other purposes.[441]

Archaeology and modern science can shed light on the earliest medicinal use of plants and animals, but we need to be very careful when making conclusions. We can be confident in our interpretations only when we have written sources that mention medical applications of various substances. The aforementioned Babylonian records, that suggest many plant and animal remedies were used in the treatment of a wide range of diseases, are one of the earliest examples.[442] The information contained in these records is probably the result of collecting and recording the effects of various substances on the human body that dates back to the

439 Hardy et al. (2012: 623–624)
440 Solecki (1977: 122–123)
441 Sherratt (1991: 50–64); Goodman et al. (1995: 26–39); Sneader (2005: 9–10)
442 Geller (2010: 2–3)
443 Ibid.
444 Nunn (1996: 30–34)

Sl. 75. Tordirani stakleni štapići također su se koristili u farmaciji za miješanje ljekovitih pripravaka. (Sisak, 1. – 4. st., K61)
~ Fig. 75 Twisted glass rods were also used in pharmacy for mixing healing remedies. (Sisak, 1st – 4th c., K61)

LJEKARNIŠTVO U GRČKOJ

Iz ranije navedenog može se zaključiti da razvoj ljekarništva prati i različite doticaje i razmjene među kulturama tijekom dugog razdoblja. Tako su i počeci ljekarništva u Grčkoj povezani s ranijim razdobljima, ali i s utjecajima bliskoistočnih kultura i Egipta. Te su veze, vjerojatno, naslijeđe koje grčka kultura baštini iz vremena Minojaca i Mikenjana. Dokumenti pisani linearom B spominju začine i biljke koje su imale medicinska svojstva (poput mirisne metvice koja se koristila kao kontracepcija).[445] Novija znanstvena istraživanja potvrđuju da su Minojci i Mikenjani miješali farmakološke sastojke s vinom i parfemima.[446] Upravo na mikenskom medicinskom znanju, koje je bilo izravno povezano sa spoznajama s Bliskog istoka i Egipta, temelji se rani razvoj Grčke medicine i ljekarništva.[447]

Homerova djela sadrže elemente narodne predaje i znanja o biljkama i njihovoj uporabi. Tako se u *Ilijadi*, među ostalim, spominju šafran i perunika, te čestoslavica.[448] Odiseja donosi i priču o čarobnici Kirki i biljci *moly* koja je Odiseja zaštitila od Kirkina čarobnog napitka.[449] Homer u svojim epovima povezuje magijsko znanje s narodnim vjerovanjima i farmakopejom. Takve elemente možemo pronaći i u fragmentima Sofoklove izgubljene drame *Rhizotomoi* (Sakupljači biljaka) gdje Sofoklo opisuje Medeju kako skuplja sok neke biljke u brončane posude i pritom sklanja pogled sa soka koji se cijedi.[450] Drama također prikazuje Medeju kako naga reže korijenje brončanim srpom i vrišti.[451] Navedeni fragmenti svjedoče da je i u 5. st. pr. Kr. znanje i prikupljanje ljekovitog bilja umijeće praćeno određenim ritualnim ili magijskim radnjama.[452] Štoviše,

Neolithic.[443] Egyptian medical texts are among the earliest records of various pharmacological substances. The best known and longest text is the Ebers Papyrus, which contains recipes for more than 700 medicines and other remedies.[444]

PHARMACY IN GREECE

It is safe to assume that the development of pharmacy corresponds with various contacts and exchanges between cultures over a long period. The beginning of pharmacy in Greece is connected with earlier periods, as well as influences from Middle Eastern cultures and Egypt. These links are probably the legacy of Greek culture from the Minoan and Mycenaean periods. Documents written in the Linear B script mention spices and plants that had medicinal properties (such as pennyroyal, a plant used as contraception).[445] Recent scientific research confirms that the Minoans and Mycenaeans mixed pharmaceutical ingredients with wine and perfume.[446] The early development of Greek medicine and pharmacy is based on Mycenaean medical knowledge directly linked to the knowledge from the Middle East and Egypt.[447]

Homer's works contain elements of folk tradition and knowledge about plants and their uses. Some of the plants mentioned in the *Iliad* are saffron, iris and speedwell.[448] *Odyssey* brings us the story of the sorceress Circe and the plant *moly* that protected Odysseus from Circe's wizardry.[449] In his epics, Homer connects magical knowledge with folk beliefs and pharmacopoeia. Such elements can also be found in the fragments of Sophocles' lost play *Rhizotomoi* (Root-cutters) where Sophocles describes Medea collecting sap from some plants into bronze pots and averting her eyes from the dripping juice.[450] There is also a scene in which a naked Medea cuts the roots with a bronze sickle while screaming.[451] These fragments testify that even in the 5th century BCE, knowledge and gathering of medicinal plants were accompanied by certain rituals or magical activities.[452] Moreover, the intertwining of magical and empirical elements defines the history of medicine, and it can be traced, as we have stated previously, through a variety of ancient sources.

Empirical research of animal, plant and mineral ingredients that can be used for preparing remedies begins with Hippocrates, who was a strong advocate of the separation of magic and science in medicine.[453] The *Hippocratic corpus* describes more than three hundred ingredients and remedies which can be used to treat illnesses. Some of them are thyme, fenugreek, liquorice, spurge, catnip, myrrh, mistletoe, wormwood, anise, coriander, cassia, cumin, castoreum, carob, almonds, lentils, cucumbers, etc.[454] This proves that food was used to make medicine, but, quite often, there was no difference between food and medicine which corresponds with the Hippocratic approach to treatment.[455]

After Hippocrates, authors of medical texts talk about plants and animals and their use in treating disease but only sporadically, and in a disorganized way. The first person who attempted to organize Greek knowledge of botany and pharmacology was Aristotle's pupil Theophrastus (Θεόφραστος, c. 371–287 BCE). In his books, *Enquiry into plants* (Περὶ φυτῶν ἱστορία) and *On the Causes of plants* (Περὶ φυτῶν αἰτιῶν), he laid the foundations for the development of pharmaceutical manuals, and he is called the "father of botany".[456] Among other things, he wrote about the structure of plants, their reproduction, growth stages and similar observations.[457] In his work *On Stones* (Περὶ λίθων), he writes about the classification of different minerals with regard to their properties.[458] With his works, Theophrastus began the much-needed standardization and organization of biological and pharmaceutical nomenclature.[459]

PHARMACY IN ROME

Due to the influence of Greek medicine in Rome, it is quite difficult to reconstruct what kind of access Romans had to pharmacy, apart from what we can learn from the

445 Scarborough (2012: 5)
446 Martlew (2002: 163–165)
447 Scarborough (2012: 6)
448 Homer. Ilijada. 14.348 i 11.847
449 Homer. Odiseja. 10.302–10.306
450 Sofoklo (grč. Σοφοκλῆς, c. 496. – 406. g. pr. Kr.), grčki tragičar. Napisao je više od 130 tragedija i satirskih igara, među kojima su *Antigona*, *Kralj Edip*, *Elektra*, itd.
~ Sophocles (Σοφοκλῆς, c. 496 – 406 BCE), Greek writer. He wrote more than 130 tragedies and satiric plays including *Antigone, Oedipus the King, Electra*, etc.
Scarborough (1991: 139)
451 Ibid.
452 Scarborough (1991); Magner (2005: 89–91)

Sl. 76. Tarionik je zadržao svoj oblik i funkciju do današnjih dana. (Sisak, 1. – 4. st., K16)
~ Fig. 76 The shape and function of mortars is the same today. (Sisak, 1st – 4th c., K16)

ispreplitanje magijskih i empirijskih elemenata obilježava povijest medicine, a može se pratiti, kao što smo i ranije naveli, u nizu različitih antičkih izvora.

Empirijsko bavljenje životinjskim, biljnim i mineralnim sastojcima koji se mogu koristiti za pripremanje lijekova, počinje s Hipokratom, koji je bio snažni zagovornik odvajanja magije i znanosti u medicinskoj praksi.[453] U Hipokratovom korpusu navedeno je preko tri stotine sastojaka i pripravaka koji se mogu koristiti u liječenju bolesti. Neki od njih su majčina dušica, piskavica, sladić, mlječika, mačja metvica, smirna, imela, pelin, anis, korijander, cimet, crni kim, castoreum, rog, bademi, leća, krastavci itd.[454] Već je iz ovog popisa vidljivo da su među ljekovite sastojke ubrajani i prehrambeni proizvodi, odnosno da između hrane i lijeka često nije bilo razlike, što je u skladu s Hipokratovim pristupom liječenju.[455]

Nakon Hipokrata, autori medicinskih tekstova biljke i životinje te njihovu upotrebu u liječenju spominju tek sporadično, često neorganizirano. Prvi koji je pokušao organizirati grčka znanja o botanici i farmakologiji bio je Aristotelov učenik Teofrast (grč. Θεόφραστος, c. 371. – 287. g. pr. Kr.). Svojim djelima *Uvid u bilje* (grč. Περὶ φυτῶν ἱστορία) i *O uzrocima biljaka* (grč. Περὶ φυτῶν αἰτιῶν) postavio je temelje razvoja ljekarničkih priručnika zbog čega ga nazivaju i ocem botanike.[456] On, između ostalog, piše o građi biljaka, njihovom razmnožavanju, fazama rasta i sličnim opservacijama.[457] Uz spomenuta djela, treba spomenuti i njegovo djelo *O kamenju* (grč. Περὶ λίθων) u kojem donosi klasifikaciju različitih minerala s obzirom na njihova svojstva.[458] Svojim je djelima Teofrast započeo prijeko potrebnu standardizaciju i organizaciju biološke i farmaceutske nomenklature.[459]

Sl. 77. Tučak izrađen od mramora sastavni je dio farmaceutskog instrumentarija. (Sisak, 1. – 4. st., K17)
~ Fig. 77 Marble pestle was an indispensable tool in pharmacy. (Sisak, 1st – 4th c., K17)

works of Cato the Elder. In his work *On Agriculture (De Agricultura)*, he combines folk medicine with magic and knowledge of agriculture, advising landowners on the proper management of the estate.[460] He connects Roman practical approach to plants and agriculture with the Greek and Italic philosophical teachings.[461]

In antiquity, one of the most important authors from the field of pharmacy was Dioscorides (Πεδάνιος Διοσκουρίδης, c. 40 – 90 CE), Greek physician and pharmacist.[462] Dioscorides wrote in Greek and he is the author of the encyclopaedia *On Medical Material* (Περὶ ὕλης ἰατρικῆς, *De Materia Medica)*, which includes about 600 ingredients and over 2000 recipes.[463] The entries are organized into six main categories: aromatics, ingredients of animal origin, cereals, herbs, wine and minerals.[464] This type of classification was tailored for physicians who used the book for treating patients — if they could not find a suitable substance; they could use a similar one from the same group.[465] Based on the way he recorded different plants, Dioscorides expected his readers to have a good knowledge of practical botany, how plants grow and different techniques of collecting and preparing them.[466] His records are the result of detailed observations and he often wrote about the scent and flavour of plants. For example, this is his description of the iris:

"The Illyrian iris bears leaves like the com flag, but larger, wider, and fatter, and flowers parallel on stems, curling, and in many colours: for one sees them either white, or quince-yellow, or purple, or bluish. It is because of this diversity of colour that it has been likened to the heavenly rainbow. The roots are below ground, articulated, firm, and aromatic. After cutting them, you must dry them in the shade, thread them with a linen string, and store them. Illyrian and Macedonian irises are superior and of these the best are matted and stunted, hard to break, yellowish in colour, highly aromatic, rather spicy in taste, pure in scent, not clammy, and ptarmic when cut. The Libyan iris is both white in colour and bitter in taste, and it ranks second in strength. As irises age, they become worm-eaten, but it is then that they become more fragrant."[467]

In addition to plants, *De Materia Medica* lists many ingredients of animal origin. It describes the preparation of fat from bears,

453 Jouanna (2001: 56)
454 Kastoreum (lat. Castoreum) izlučevina je koju proizvode analne žlijezde dabrova.
~ Castoreum is a yellowish secretion from the castor sacs of beavers.
Riddle (2013: 66–67)
455 Irby (2016: 404)
456 Scarborough (2012: 7)
457 Theophrastus (1916)
458 Theophrastus (1956)
459 Sollenberger (2008: 798–801); Irby (2016: 405)

LJEKARNIŠTVO U RIMU

S obzirom na širenje utjecaja grčke medicine u Rimu, dosta je teško rekonstruirati kakav su pristup ljekarništvu imali Rimljani, izuzev onoga što nam je ostalo zapisano u prozi Katona Starijeg. U djelu *O poljoprivredi (De agricultura)* on spaja narodnu medicinu s magijom i znanjem o poljoprivredi, savjetujući zemljoposjednika o ispravnom upravljanju posjedom.[460] Njegovo djelo povezuje rimski praktični pristup biljkama i zemljoradnji s grko-italskim filozofskim učenjima.[461]

Zasigurno je jedan od najvažnijih autora iz polja farmacije u antičko vrijeme Dioskorid (grč. Πεδάνιος Διοσκουρίδης, c. 40. – 90. g. po. Kr.), grčki liječnik i farmaceut.[462] Dioskorid je pisao na grčkom jeziku i autor je enciklopedijskog djela *O ljekovitim tvarima* (grč. Περὶ ὕλης ἰατρικῆς, lat. *De materia medica*) u kojem donosi oko 600 sastojaka i preko 2000 recepata.[463] Zapisi su organizirani u šest osnovnih razreda: aromatici, sastojci životinjskog porijekla, žitarice, bilje, vina i minerali.[464] Takva je organizacija građe bila prilagođena liječnicima koji su djelo koristili u praksi – ako nisu mogli pronaći odgovarajuću supstancu, mogli su posegnuti za nekom sličnom iz iste grupe.[465] S obzirom na način na koji je pristupio bilježenju različitih biljaka, Dioskorid je od svojih čitatelja očekivao dobro poznavanje praktične botanike, razumijevanje rasta te poznavanje različitih tehnika branja biljaka i načina njihove pripreme.[466] Njegovi su zapisi rezultat detaljnih opservacija, a često je bilježio mirise i okuse biljaka. Primjerice, ovako je opisao peruniku:

"Ilirska perunika ima listove poput gladiole, samo veće, šire i deblje, s paralelnim zavijenim šarenim cvjetovima na stabljikama; mogu se pronaći bijeli, žuti, ljubičasti ili plavičasti cvjetovi. Zbog te raznolikosti boja uspoređuju ih s nebeskom dugom. Korijenje je ispod zemlje, artikulirano, čvrsto i aromatično. Nakon rezanja morate ih sušiti u sjeni, nanižite ih na lanenu nit te ih pohranite. Ilirske i makedonske perunike vrhunske su kvalitete, a najbolji su oni mat boje i zakržljali, koji se teško lome, žućkaste boje, izrazito aromatičnog, pikantnog okusa, čista mirisa, nisu ljepljivi niti potiču na kihanje kada ih se reže. Libijska je perunika bijele boje i gorkog okusa, drugi po snazi. Kako perunike stare, postaju crvljive, no tad su najmirisnije."[467]

Osim biljaka, *De materia medica* navodi i mnoge sastojke životinjskog porijekla. Tako primjerice opisuje pripremanje masti od medvjeda, koza i lavova, a popisuje i koštane srži i žuči te mlijeka, krv i ostale tjelesne izlučevine različitih reptila, ptica, sisavaca i ljudi.[468]

Svakako treba spomenuti i Dioskoridove suvremenike Celsusa, čije je enciklopedijsko djelo *O medicini (De medicina)* sačuvano, te Skribonija Larga koji sastavlja djelo *Recepti (Compositiones)*.[469] Obojica u svojim djelima navode recepte za mnoge lijekove i ostale farmakološke pripravke.

U 1. st. djelovao je i Plinije Stariji, koji u svome djelu *Prirodoslovlje (Na-*

Sl. 78. U pripremi lijekova od više različitih sastojaka sigurno su korištena i cjedila, poput ovih olovnih primjeraka. (Sisak, 1. – 4. st., K28 – 29)
~ Fig. 78 During the preparation of remedies with multiple ingredients, pharmacists probably used colanders, such as these lead ones. (Sisak, 1st – 4th c., K28 – 29)

goats and lions, and lists different types of bone marrow, bile and milk, blood and other bodily fluids of various reptiles, birds, mammals and humans.[468]

We must also mention Celsus, Dioscorides' contemporary whose encyclopaedia *On medicine (De medicine)* was preserved, and Scribonius Largus and his work *Prescriptions (Compositiones).*[469] They both listed recipes for many remedies and other pharmacological compounds.

In the 1st century BCE, Pliny the Elder brings us a review of local and exotic plant and animal species and minerals in his work *Natural History (Naturalis Historia).*[470] Pliny uses an encyclopaedic approach and the records are often accompanied by anecdotes and stories collected during his travels.[471]

Galen, the most famous physician of the Roman period, also contributed to the development of pharmacology. In his works, he explores the properties of various medicines, from simple to more complex and exotic ones.[472] Galen emphasizes the importance of choosing the proper remedy according to the diagnosis, as well as the correct dosage of medicine.[473] As court physician of Emperor Marcus Aurelius, Galen researched various complex recipes for making antidotes.[474] He managed to consolidate the knowledge about how different medicine function according to authors who followed the Hippocratic tradition of medicine, but he could not figure out how they actually worked.[475] During the Middle Ages, one of the most frequently used medicine was *Galen's hiera*, or as he called it, the "Holy medicine". Hiera was a strong purgative which Galen prescribed in cases of facial paralysis, severe spasms, pain and in order to purge the body and restore the humoral balance. The drug contained 26 different ingredients, including colocynth pulp, scammony, hellebore, true germander, horehound, ammonia, peppers, cinnamon and honey.[476]

After Galen, there are few original works that deal with pharmacy. Authors from Late Antiquity wrote mostly shorter versions of works by older authors, so the abridged edition of Pliny's work appears as early as

460 Thibodeau (2008: 686–688)
461 Scarborough (1969: 53–57)
462 Riddle (1985: 4)
463 Njegovo je djelo bilo u kontinuiranoj uporabi sve do 16. stoljeća te je prevedeno na arapski, sirijski i latinski. Doživjelo je mnoga izdanja, a najpoznatije je ilustrirano izdanje koje se čuva u Beču, naručeno 512. godine po. Kr.
~ His work was used continuously until the 16th century, and was translated into Arabic, Syrian and Latin. It was published many times, but the most famous is the illustrated edition kept in Vienna, and ordered in 512 CE. Irby (2016: 273)
464 Beck (2005)
465 Irby (2016: 273)
466 Scarborough (1996: 44)
467 Dioscurides. De materia medica. 1.1
468 Dioscurides. De materia medica. 2.76–80
469 Magner (2004: 117–121); Scarborough (2012: 12)

turalis historia) donosi, između ostalog, pregled lokalnih i egzotičnih biljnih i životinjskih vrsta i minerala.[470] Plinijev je pristup enciklopedijski te su zapisi često praćeni anegdotama i pričama koje je prikupio na svojim putovanjima.[471]

Razvoju znanja o farmakologiji pridonio je i najpoznatiji liječnik iz rimskog perioda, Galen. U svojim djelima on istražuje svojstva lijekova, od jednostavnih do složenih i egzotičnih. Galen naglašava i važnost ispravnog odabira lijeka s obzirom na dijagnozu, te ističe važnost točnog doziranja i primjene lijeka.[473] Kao dvorski liječnik cara Marka Aurelija, Galen je istraživo i različite kompleksne recepte za izradu protuotrova.[474] U svojim djelima Galen uspijeva usuglasiti djelovanja lijekova kako ih opisuju autori koji slijede Hipokratovu tradiciju medicine, no ne uspijeva dokučiti kako lijekovi zapravo djeluju.[475] Tijekom srednjeg vijeka jedan od najčešće korištenih lijekova bila je *Galenova hiera* ili, kako je on naziva, Sveti lijek, jaki purgativ koji se davao kod najrazličitijih bolova. Lijek je sadržavao 26 različitih sastojaka, među kojima su trave kolocint, slak, kukurijek, dubačac, tetrljan te amonijak, papričice, cimet i med.[476]

Nakon Galena, malo je originalnih farmaceutskih djela. Autori koji pišu u kasnoj antici većinom skraćuju djela starijih autora pa se tako već u 3. stoljeću pojavljuje skraćeno izdanje Plinijeva djela.[477] Marcel iz Bordoa (lat. *Marcellus Empiricus*, 4. – 5. st.) sastavlja djelo *O lijekovima (De medicamentis)* u kojem spaja informacije posuđene od Skribonija Larga s galskom narodnom medicinom, magijom, napjevima i ritualima.[478] Kasnoantički autori većinom uređuju ranija grčka djela i prevode ih na latinski.[479] Zahvaljujući tome, mnoga djela grčkih autora, makar i u smanjenom obujmu, lišena teorije i uklopljena u narodnu medicinu, preživljavaju i postaju osnova ranosrednjovjekovne učene medicine.[480]

PRIPREMA I PRIMJENA ANTIČKIH LIJEKOVA

Priprema svakog lijeka počinjala je s prikupljanjem sastojaka. Antički su liječnici i ljekarnici koristili široku lepezu sastojaka, od octa, meda i bilja do tjelesnih izlučevina te minerala.[481] Prikupljanje i skladištenje tih sastojaka često je iznimno kompliciranо i zahtijevalo je dosta vremena, što najbolje opisuje Dioskorid:

"[Sokovi] iz biljaka ekstrahiraju se kada su stabljike mlade; isto vrijedi i za listove. Sok i smolu skupljaš tako da stabljiku zarežeš dok je u najboljem stanju, no korijenje koje planiraš skladištiti, iz kojih želiš ekstrahirati sok, i čije vanjske dijelove želiš iskoristiti sakupljaj kada biljka počne odbacivati svoje listove. Čisto korijenje mora se odmah sušiti na mjestu koje nije vlažno, no korijenje koje sadrži zemlju ili glinu moraš oprati vodom. Cvjetovi i ostali mirisni dijelovi biljke moraju se pohraniti u suhe kutije od lipina drveta, a ponekad ih se može zamotati u papirus ili lišće kako bi se sačuvale sjemenke. Sve posude napravljene od srebra, stakla ili roga pogodne su za pohranu vlažnih lijekova. Keramičke su

Sl. 79. Recipijent žličice izrađen od kositra, za koji se smatralo da ne izaziva neželjene kemijske reakcije u dodiru s određenim supstancama. (Sisak, 1. – 4. st., K187)
~ Fig. 79 A spoon with a tin recipient was considered to prevent unwanted chemical reactions when handling different substances. (Sisak, 1st – 4th c., K187)

the 3rd century.[477] Marcellus Burdigalensis (*Marcellus Empiricus*, 4th – 5th century CE) wrote *On remedies (De Medicamentis)*, which combines information borrowed from Scribonius Largus with Gaelic folk medicine, magic, incantations and rituals.[478] Late Antiquity authors mostly edited earlier Greek works and translated them into Latin.[479] As a result, many works of Greek authors, albeit in a reduced form, devoid of theory and combined with folk medicine, survived and became the basis of early medieval scholarly medicine.[480]

PREPARATION AND APPLICATION OF ANCIENT REMEDIES

The preparation of each remedy began with gathering ingredients. Physicians and pharmacists used a wide array of ingredients, from vinegar, honey and herbs to bodily fluids and minerals.[481] Gathering and storage of ingredients was often extremely complicated and required a lot of time. It was best described by Dioscorides:

"Also one must extract juice from herbs when their stems have newly sprouted; the same applies to leaves. One must catch saps and gums by cutting the stems when still at the peak of perfection, but roots intended for storage, for extracting their juice, and for their outer layers must be dug up at the time the plants begin to shed their leaves. Clean roots must be dried immediately in places that are free of moisture, but roots containing earth or clay must be washed with water. Both blossoms and whatever aromatic parts there happen to be should be stowed in moisture-free lime wood boxes and there are instances when they are wrapped to good avail in papyrus or in leaves to preserve their seeds. All silver, glass, or horn vessels will do nicely for liquid medicines, as will earthenware vessels, provided they are not thin, and of the wooden containers, all that are made of boxwood. Brazen receptacles are suitable for eye lotions and for all preparations that are made with vinegar, or raw pitch, or oil of Syrian cedar, but hard fats and marrows should be stored in containers made of tin."[482]

Ancient sources contain long lists of various ingredients such as amber, saffron, iris, thyme, cabbage, as well as snakes, lizards, amphibians and insects.[483] Plant and animal ingredients could be used fresh or dried, they could be the steamed or kept in oil, and mineral ingredients were ground or heated.[484]

The healing properties of easily available substances were probably well known to ordinary people, as evident from the works of Pliny the Elder, but when it was necessary to

470 Scarborough (1986)
471 Beagon (1992: 227–240)
472 Magner (2004: 127–132)
473 Irby (2016: 409)
474 Scarborough (1995: 17–18)
475 Nutton (2004: 244–245); Scarborough (2012: 10–11)
476 Pormann (2012: 298)
477 Önnerfors (1964)
478 Rouselle (1976: 1092–1095)
479 Wilkins (2014: 173–190)
480 Henderson (2007)
481 Scarborough (1996: 41–44)

posude isto prikladne, pod uvjetom da nemaju tanke stjenke, a i drvene kutije, ako su izrađene od šimšira. Bakrene posude prikladne su za pohranu vlažnih lijekova za oči, kao i za lijekove napravljene od octa, sirove smole ili ulja smreke. Životinjske masti i koštanu srž čuvaj u olovnim posudama."[482]

U antičkim su nam izvorima sačuvani veliki popisi najrazličitijih sastojaka, poput jantara, šafrana, perunike, majčine dušice, zelja, ali i zmija, guštera, vodozemaca i insekata.[483] Biljne i životinjske sastojke moglo se koristiti svježe ili sušene, a mogli su se i pariti ili držati u ulju, dok su se mineralni sastojci mrvili ili zagrijavali.[484]

Ljekovita svojstva lako dostupnih supstanci vjerojatno su bila dobro poznata običnim ljudima, na što nas upućuje i Plinije Stariji, ali kada je bilo potrebno napraviti kompleksnije lijekove obraćali su se ljekarnicima i liječnicima koji su se koristili praktičnim priručnicima.[485]

Lijekovi su mogli biti pripremljeni u obliku tableta, otopina, masti, krema ili pastila, ovisno o tome kako su se primjenjivali.[486] Ljekoviti pripravci često su se miješali s octom, vinom, medom te hidromelom ili oksimelom.[487] Navedene supstance imale su antibakterijska svojstva, a u fermentiranom su obliku vjerojatno pojačavali djelovanja ostalih sastojaka u lijeku.[488] Ako lijek nije bilo moguće primijeniti oralno, antički su liječnici lijekove znali primjenjivati kroz druge tjelesne otvore u obliku čepića i vaginaleta. Melemi su se primjenjivali pri zacjeljivanju rana i u slučaju dermatoloških problema, a u istu su se svrhu upotrebljavale otopine za ispiranje.[489] Lijekovi su se mogli i udisati, putem pare ili dima, a posebna vrsta lijekova, *collyrium*, izrađivana je u obliku prešanih pločica na koje su bile utisnuti podaci o sastavu.[490]

Neke od supstanci koje su navedene u pisanim izvorima, potvrđuju i analize lijekova pronađenih na nekolicini antičkih arheoloških nalazišta. Tako je u Ninu pronađena brončana kutija za lijekove u kojoj su bile tri tablete. Analizom tih tableta potvrđeno je da su se sastojale od olovnog karbonata, neke vrste smole i organskih sastojaka.[491] Zbog nemogućnosti provođenja specifičnih analiza tvari organskog porijekla, u slučaju tableta iz Nina nije poznato o kojim je organskim sastojcima riječ. U brodolomu kod Pozzina pronađena je i analizirana olovna kutija sa šest tableta. Analiza tih tableta potvrdila je da su vjerojatno bile lijek za neku očnu bolest, a sadržavale su cinkove spojeve, škrob, mrkvu, rotkvicu, peršin, celer, divlji luk, hibiskus i stolisnik, kao i ulja, pčelinji vosak i borovu smolu.[492] U grobu ljekarnika iz Lyona pronađena je kutijica s 20 lijekova. Njihovom je analizom utvrđeno da su sadržavali olovo, cink, bakar, smole, željezo, arsen i ugljik.[493]

Dioskorid je u predgovoru naveo materijale od kojih su mogle biti napravljene posude za čuvanje lijekova i ljekovitih supstanci.[494] Arheološki nalazi potvrđuju njegove navode. Četvrtaste kutije načinjene od drveta ili bronce pronađene su na brojnim arheološkim lokalitetima.[495] Često se nalaze i cilindrične kutije od kosti, roga, olova i drveta.[496] U Arheološkom muzeju u Za-

make more complex remedies, they went to pharmacists and physicians who consulted handbooks.[485]

Remedies could be prepared in the form of tablets, solutions, ointments, creams or pastes, depending on how they were to be applied.[486] They were often mixed with vinegar, wine and honey, as well as hydromel or oximel.[487] These substances have antibacterial properties, and when fermented likely amplified the effects of other ingredients.[488] If a remedy could not be used orally, physicians used other bodily orifices to administer them in the form of suppositories and vaginal suppositories. Salves and solutions were used for healing wounds and for treating dermatological problems.[489] Remedies could also be inhaled, through steam or smoke, and a special type of medication, *collyrium*, was made in the form of pressed tiles with a list of ingredients stamped on them.[490]
Some of the substances listed in written sources were confirmed by analysing remedies found on several archaeological sites. A bronze box for medicine containing three tablets was found in the city of Nin. The analysis of these tablets confirmed that they contained lead carbonate, a kind of resin and organic ingredients.[491] Since it is impossible to carry out specific analysis of organic substances, we cannot know which organic ingredients were used. In the shipwreck near Pozzino, a lead box with six tablets was found and analysed. The analysis of these tablets confirmed that they were probably used as a cure for some kind of eye disease, and contained zinc compounds, starch, carrot, radish, parsley, celery, wild onion, hibiscus and yarrow, as well as oils, beeswax and pine resin.[492] A box with twenty tablets was recovered from the grave of a pharmacist from Lyon. They contained lead, zinc, copper, resin, iron, arsenic and carbon.[493]

In his preface, Dioscorides lists the materials used to make containers for storing medicines and remedies, confirmed by archaeological finds.[494] Rectangular boxes made of wood or bronze were found on numerous archaeological sites.[495] Cylindrical boxes made of bones, horns, lead and wood are also often found.[496] The Archaeological Museum in

Sl. 80. Cilindrične posude s poklopcima, izrađene od olova, srebra, kosti i roga, mogle su poslužiti za skladištenje pojedinih sastojaka ili već gotovog ljekovitog pripravka. (Sisak, 1. – 4. st., K63 – 70)
~ Fig. 80 Cylindrical boxes with lids, made of lead, silver, bone and horn, could have been use for storing medical ingredients or prepared healing remedies. (Sisak, 1st – 4th c., K63 – 70)

482 Dioscurides. De materia medica, Predgovor.9.
483 Duffin (2008); Hillman (2001); Everett (2012); Irby (2016: 411–412).
484 Beck (2005)
485 Scarborough (2012: 12)
486 Irby (2016: 412–414)
487 Hidromel (*hydromel*) je fermentirana mješavina meda i vode.
Oksimel (*oxymel*) je mješavina meda, vode, octa i soli.
~ Hydromel is a fermented combination of honey and water.
Oximel is a combination of honey, water, vinegar and salt.
Pliny. Natural History. XIV.113–XIV.114
488 Majno (1975: 115–20, 370); Scarborough (1996: 49); Nutton (2004: 68)
489 Irby (2016: 411–413)
490 Pérez-Cambrodi et al. (2013)
491 Grmek, Čmelik (1952)
492 Touwaide, Fleischer (2010); Giachi et al. (2012)
493 Künzl (2002: 85)
493 Dioscurides. De materia medica Predgovor.9
494 Dioscurides. De materia medica Predgovor.9;
495 Grmek, Čmelik (1952: 127)

grebu čuvaju se dvije kutije koje su se mogle koristiti u medicini, jedna je cilindrična s figuralnim ukrasom i načinjena je od roga (inv. br. A–9811), a druga je od jantara i ovalnog je oblika sa sačuvanim poklopcem (inv. br. A–19219). U mnogim je slučajevima teško bez jasnog konteksta odrediti točnu upotrebu određenih predmeta, posebno posuda, koji su se mogli koristiti u različite svrhe, od svakodnevnih, za pripremanje hrane, do kozmetičkih i medicinskih.[497] Osim spomenutih kutija, u ljekarničkoj su se djelatnosti upotrebljavali i alati poput vaga, pločica za razmazivanje, tarionika, staklenog, keramičkog i metalnog posuđa i sl.

Antička farmacija naizgled nema ništa zajedničko s modernim pristupom farmaciji – u antičkim je lijekovima svaki sastojak imao aktivnu ulogu i trebao se prikupiti i obraditi na poseban način, dok u modernoj farmaciji lijekovi imaju jednu ili svega nekoliko aktivnih supstanci, dok su ostale supstance neaktivne.[498] Česti sastojak lijekova bili su različiti metalni spojevi i minerali, koji su nerijetko bili toksični, ali i učinkoviti protiv cijelog niza upalnih procesa.[499] Učinkovitost određenih antičkih lijekova možda se može pripisati placebo efektu, no novija znanstvena istraživanja i analize antičke farmakopeje govore nam da su liječnici u antici posjedovali određeno znanje o djelovanju različitih supstanci, što je vjerojatno rezultat znanja i opservacija koje su se usmenom predajom ili pisanim putem prenosila kroz stoljeća.[500]

PROTUOTROVI

Posebno mjesto u povijesti farmacije zauzimaju protuotrovi. Aleksandrovim osvajanjima i helenističkom ekspanzijom, u Grčku počinju pristizati farmakološka znanja i sastojci iz svih dijelova tada poznatog svijeta, a naglasak farmakološkog znanja je na toksikologiji.[501] Zanimanje za toksikologiju vjerojatno su potaknuli helenistički vladari, koji su ulagali značajna sredstva i napore kako bi izbjegli moguće pokušaje ubojstva.[502]

Iz tog razdoblja treba izdvojiti dvojicu liječnika poznatih po pripravi protuotrova: Andreasa (grč. Ἀνδρέας, 3. stoljeće pr. Kr.), liječnika Ptolomeja IV. koji pažljivo bilježi svojstva i vrste otrova te protuotrova, i Nikandera iz Kolofona (grč. Νίκανδρος, 2. stoljeće pr. Kr.), pjesnika i liječnika, koji djeluje na dvoru Atala III. iz Pergama i sastavlja pjesme *Theriaca* i *Alexipharmaca* u kojima opisuje svojstva otrovnih životinja, otrova i protuotrova.[503]

Kralj Mitridata IV. od Ponta (preminuo oko 150 g. pr. Kr.), vršio je i eksperimente na ljudima. Spomenuti je kralj, navodno, razvio imunost na otrove tako što je uzimao sve veće i veće količine otrova kroz dulji vremenski period.[504] Iako je istinitost ove priče upitna, bila je inspiracija za rastuće polje razvoja protuotrova za ubode i ugrize životinja.[505] Osim helenističkih kraljeva, i rimski je car Marko Aurelije (121. – 180. g.) naručivao od svog dvorskog liječnika Galena

Sl. 81. Za točno doziranje koristili su se utezi i vage jednakih krakova kojima bi sa svake strane bio obješen recipijent. (Sisak, 1. – 4. st., K23 – 26)
~ Fig. 81 Weights and equal arm scales were used for precise measuring. (Sisak, 1st – 4th c., K23 – 26)

Zagreb has two boxes that could have been used in medicine. The one is cylindrical with figural decoration, and it is made out of a horn (inv. no. A–9811). The other one has an oval shape; it is made of amber and has a lid (inv. no. A–19219). In many cases, it is difficult to determine the exact use of certain items, particularly containers. They could have been used for different purposes, from food preparation to cosmetics and medicine.[497] Also, tools such as scales, mortar, glass, ceramic and metal vessels were all used in pharmacy.

Pharmacy in antiquity seemingly has nothing in common with modern pharmacy. In antiquity, each ingredient for a remedy had an active role and was supposed to be collected and processed in a special way. Modern pharmaceutical drugs have one or maybe a few active substances and all others are inactive.[498] Frequent ingredients in a lot of remedies were different metal compounds and minerals that are toxic but effective against a whole range of inflammatory processes.[499] The effectiveness of certain remedies may be attributed to the *placebo* effect, but recent scientific research and analysis of ancient pharmacopoeia tell us that physicians possessed certain knowledge about how various substances worked. This was probably the result of knowledge and observations passed down over centuries through word of mouth or in written form.[500]

ANTIDOTES

A special place in the history of pharmacy belongs to antidotes. Pharmacological knowledge, with an emphasis on toxicology, and ingredients from all over the world started arriving in Greece with Alexander's conquests and Hellenistic expansion.[501] The interest in toxicology was probably encouraged by Hellenistic rulers who invested significant resources and efforts to avoid possible assassination attempts.[502]

Two physicians known for preparing antidotes are Andreas (Ἀνδρέας, 3rd century BCE), and Nicander of Colophon (Νίκανδρος, 2nd century BCE). Andreas was a physician of Ptolemy IV, and he carefully recorded the properties and types of poisons and antidotes. Nicander was a poet and physician. He worked on the court of Attalus III of Pergamon, and wrote poems *Theriaca* and *Alexipharmaca* in which he describes the characteristics of poisonous animals, poisons and antidotes.[503]

King Mithridates IV of Pontus (died around 150 BCE), carried out experiments on humans. He allegedly developed immunity to poisons by taking greater and greater amounts of poisons over a long period.[504] Although we cannot be sure if this story is true or not, it influenced the growing field of antidotes for treating stings and animal

496 Künzl (1983); Giunio (2010: 27); Touwaide, Fleischer (2010)
497 Künzl (1983); Künzl (2002: 48–55)
498 Irby (2016: 415)
499 Dioscorides. De materia medica, 5.74–162; Scarborough (1996: 49–50)
500 De Craen et al. (1999), Totelin (2009: 297–301)
501 Scarborough (2012: 8)
502 Irby (2016: 414–415)
503 Scarborough (1977); Scarborough (1979); Von Staden (1989: 472–7)
504 Mayor (2009)
505 Totelin (2004)

različite protuotrove, koji su često sadržavali preko 60 sastojaka koje je trebalo pripremati u mnogo faza i čije je spajanje trebalo provesti u točno određeno vrijeme.[506]

Razvijanjem protuotrova i kombiniranjem različitih sastojaka poput maka, mandragore ili kužnjaka, antički su liječnici vjerojatno primijetili njihovo umirujuće djelovanje te su ih koristili za ublažavanje boli bolesnika.[507]

LJEKARNIČKA ZANIMANJA I TRGOVINA LIJEKOVIMA

Plinije Stariji upozorava na visoke cijene usluga školovanih liječnika i ljekarnika.[508] Zbog takvog elitizma, siromašniji građani ovisili su o vlastitom poznavanju biljaka i uslugama sakupljača korijenja (grč. *ho rhizotomos*) koji su im mogli ponuditi složenije lijekove.[509] Primarna je djelatnost sakupljača korijenja bila prikupljanje i osnovna obrada sastojaka, što je nerijetko uključivalo složene ritualno-magijske radnje i zbog čega je bavljenje tim poslom zahtijevalo posebnu specijalizaciju.[510] Jedan od njih možda je bio i *Valentini (h)erbari(i)*, čije je ime i zanimanje (*herbarius*) zabilježeno na olovnoj teseri iz Siska (inv. br. A–13124), koja se čuva u Arheološkom muzeju u Zagrebu.[511]

Mnogi liječnici, koji nisu bili iskusni u pripremi lijekova ili nisu imali vremena, plaćali su usluge specijaliziranih prodavača lijekova (*pharmakolopes*).[512] Osim njih, farmakološki su se sastojci mogli kupiti i od putujućih trgovaca, ali i prodavača egzotičnih namirnica.

Tržište ljekovitim sastojcima značajno se proširilo Aleksandrovim osvajanjima, no procvalo je u vrijeme Rimskog Carstva. Različite namirnice i egzotični sastojci uvozili su se iz svih krajeva Carstva.[513] Rim je stabilizirao morsku i kopnenu trgovinu, no egzotični su sastojci, zbog svoje cijene, i dalje bili izvan dohvata običnih građana.[514] Stoga je većina morala posegnuti za lokalno dostupnim sastojcima, kako zbog njihove cijene tako i zbog njihove svježine.

KAKO SU RIMLJANI LIJEČILI GLAVOBOLJU

Glavobolja je očito podjednako mučila Rimljane, kao što muči i nas danas. Plinije Stariji predlaže da u slučaju glavobolje na glavu prislonite slonovu surlu, a lijek će biti osobito učinkovit ako slon pritom kihne.[515] Ako to ne pomogne, možete probati popiti vino u kojem se namakao kameleon ili staviti oblog natopljen menstrualnom krvlju i ružinim uljem.[516] Ako niti jedan od ovih savjeta ne pomogne, genitalije lisice zavezane oko glave trebale bi izliječiti upornu glavobolju.[517]

Sl. 82. Diskoidni apotearski uteg s oznakama na površini. Reljefno je izvedeno slovo N na jednoj, te slovo H na drugoj strani. (Sisak, 1. – 4. st., K26/6)
~ Fig. 82 Disc-shaped apothecary weight with markings on the surface, the relief of the letter N is on one side, and the letter H on the other. (Sisak, 1st – 4th c., K26/6)

Sl. 83. Uteg ukrašen reljefnim prikazom sastavljenim od nepravilnih ureza. (Sisak, 1. – 4. st., K27)
~ Fig. 83 Scale weight with a relief decoration made with irregular incisions. (Sisak, 1st - 4th c., K27)

bites.[505] Except Hellenistic kings, Roman emperor Marcus Aurelius (121 – 180 CE) also ordered his court physician Galen to make different antidotes. They often contained more than 60 components that had to be prepared in stages and combined at specific times.[506]

By developing antidotes and combining different ingredients like poppy, mandrake or thornapple, physicians noticed their calming effect and used them on patients to relieve pain.[507]

PHARMACOLOGICAL PROFESSIONS AND SALE OF REMEDIES

Pliny the Elder warns of high costs for services from trained physicians and pharmacists.[508] This is the reason poorer citizens depended on their own knowledge of plants and services from rootcutters (*ho rhizotomos*) who could offer them compounded remedies.[509] The primary activity of rootcutters was collecting and processing basic ingredients, which often involved complex rituals and magical activities, and required a separate specialization.[510] One of them might have been *Valentini (h)erbar(i)*, whose name and occupation *(herbarius)* was recorded on a lead tessera from Sisak (Inv. No. A–13124), kept in the Archaeological Museum in Zagreb.[511]

Many physicians, who were not experienced in the preparation of remedies or did not have time for it, used specialized sellers of remedies *(pharmakolopes)*.[512] Pharmacological ingredients could also be bought from traveling salesmen, as well as sellers of exotic foods.

The market for medicinal ingredients significantly expanded after Alexander's conquests, but it reached its peak during the Roman Empire.[513] Different foods and ingredients were imported from all over the Empire. Rome stabilized the sea and land trade, but exotic ingredients, due to their cost, were still beyond the reach of ordinary citizens.[514] Therefore, most had to use locally available ingredients, both because of their cost and freshness.

HOW DID ROMANS TREAT HEADACHES?

Headaches were obviously a problem that Romans had to deal with like we do today. According to Pliny the Elder, in case of a headache, you should put your head on an elephant's trunk, and it is especially effective if the elephant sneezes during the process.[515] If that does not work, you can try drinking wine after a chameleon has soaked in it, or use a compress soaked in menstrual blood and rose oil.[516] If these tips did not help, genitals of a fox tied around the head should cure a persistent headache.[517]

506 Scarborough (1995); Stein (1997)
507 Cilliers (2012: 31–44)
508 Pliny. Natural History XXIX.8.
509 Irby (2016: 410)
510 Scarborough (1991: 143–144)
511 Tesere su olovne pločice kojima se označavala ambalaža. Trgovci bi često, radi lakšeg snalaženja, na njih napisali i zanimanje kupca.
~ The tesserae are lead plates used for marking packages. For convenience, merchants would also write the customer's profession on them.
Radman-Livaja (2014: 337)
512 Irby (2016: 411)
513 Nutton (1985)
514 Ibid.
515 Pliny. Natural History. XXVIII.24.88
516 Eadie (2012: 43)
517 Hartston (2007: 147)

ANTIČKI MEDICINSKI PRIBOR
~
GREEK AND ROMAN MEDICAL INSTRUMENTS

Većina spoznaja o antičkoj medicini i farmaciji crpi se iz djela antičkih autora. Pomoću njih možemo shvatiti kako se u antici poimalo ustrojstvo ljudskog tijela, teorije bolesti, ideje o djelovanju lijekova te zahvate kojima je svrha bila ukloniti bolest i umanjiti bol. No osim pisanih izvora, razumijevanju ove problematike svakako doprinosi i arheologija. Brojni arheološki nalazi medicinskih instrumenata, grobnih stela, vojnih bolnica i liječničkih rezidencija jasnije nam oslikavaju svijet antičke medicine, a u sprezi s pisanim izvorima proširuju znanja o medicinskoj i farmaceutskoj praksi u antici.

Interes za interpretaciju antičkih medicinskih instrumenata pojavio se dosta rano u povijesti arheologije.[518] S obzirom na to da je sačuvan relativno mali broj medicinskih instrumenata iz grčkog i helenističkog razdoblja, većina radova iz ovog područja bavi se ostacima rimskih medicinskih instrumenata koji se mogu datirati u razdoblje od 1. do 4. st.[519]

Medicinski instrumenti često su imali višestruke funkcije – značajan ih se broj mogao upotrebljavati u farmaciji, kozmetici, zidnom slikarstvu i sl.[520] Proces je dvosmjeran pa su se tako, primjerice, noževi, škare, pile, dlijeta, pincete, žličice, igle i sl. koristile i u medicinske svrhe.[521]

O njihovoj multifunkcionalnosti govori i činjenica kako su i sami medicinski instrumenti izrađivani na način da imaju najmanje dvostruku funkciju, s obzirom na to da su kod većine instrumenata funkcionalna oba kraja.[522] Tome u prilog idu i pronalasci brojnih predmeta koji predstavljaju spoj nekih osnovnih medicinskih instrumenata, poput pincete koja na jednom kraju ima ušnu sondu ili spatulu.[523]

Ove činjenice valja imati na umu prilikom interpretacije instrumenata, osobito onih o čijim se okolnostima nalaska zna vrlo malo ili ništa. Zbog toga su za funkcionalnu interpretaciju i dataciju najzanimljiviji nalazi iz zatvorenih grobnih cjelina koji se, zatim, mogu usporediti s podacima iz pisanih izvora.

S obzirom na brojne varijacije medicinskih instrumenata, ovdje su prikazani samo osnovni oblici koji se obično nalaze prilikom arheoloških istraživanja. Osim njih, spomenuti su i instrumenti koji se ne pronalaze često,

Sl. 84. U uskim cilindričnim tuljcima liječnici su čuvali svoje medicinske instrumente. (Sisak, 1. – 4. st., K196 – 197)
~ Fig. 84 Narrow cylindrical boxes were used by physicians for storing and carrying their medical instruments. (Sisak, 1st – 4th c., K196 – 197)

Most of what we know about medicine and pharmacy in ancient Greece and Rome comes from works by ancient authors. They allow us to understand ancient ideas about the human body, illness, pharmacology, and surgery intended to reduce pain and eliminate disease. In addition to written sources, archaeology also contributes to our knowledge of ancient medicine. Numerous medical instruments, funerary monuments, military hospitals, and physician's residences perfectly illustrate medicine in antiquity. In conjunction with written sources, they expand our knowledge of medical and pharmaceutical practice in ancient Greece and Rome.

Rather early, archaeology started to interpret ancient medical instruments.[518] Since a relatively small number of preserved medical instruments date back to the Classical and Hellenistic periods, most authors working in this field published Roman medical instruments that can be dated from the 1st to the 4th century CE.[519]

Medical instruments often had multiple functions — a significant number could have been used in pharmacy, cosmetics, wall painting etc.[520] This is a two-way process, meaning that many utilitarian items, such as knives, shears, saws, chisels, tweezers, spoons, needles etc., were used in medicine.[521]

This is confirmed by numerous medical instruments designed to have two functional ends.[522] There are also items made by combining basic medical instruments, such as the forceps which at one end has an ear probe or spatula.[523]

We should keep this in mind when analysing medical instruments, especially the ones without information on how and where they were found. Therefore, material from undisturbed burials is especially important because it can be dated and analysed using information from written sources.

Due to many variations of medical instruments, we are only going to discuss the basic types usually found during archaeological excavations, as well as instruments that are not that common but are often mentioned

518 Milne (1907)
519 Milne (1907); Gregl (1982); Gregl (1983a); Künzl (1983); Feugére et al. (1985); Jackson (1990); Jackson (1992); Jackson (1994); Braadbaart (1994); Künzl (1996); Künzl (2002)
520 Gregl (1982: 179–183); Baker (2009:1–2)
521 Jackson (1994: 195)
522 Jackson (1986: 132); Jackson, Leahy (1990: 271–272)
523 Milne (1907: 93); Zsidi (2006: 55)

ali ih pisani izvori spominju kao osnovne instrumente pri izvođenju mnogih zahvata. Na samom su kraju prikazane i dvije grupe predmeta, pločice za razmazivanje i vage, koji su dio farmaceutskog inventara, ali se mogu naći i među liječničkim priborom.

Opisi se temelje na opisima autora koji obrađuju antički medicinski instrumentarij, kao i na instrumentima iz fundusa Antičkog odjela Arheološkog muzeja u Zagrebu.[524]

EUTYCHES JE DOBAR ČOVJEK.

Arheološka istraživanja na Piazzi Ferrari u Riminiju (1989. – 2006.) otkrila su ostatke rimske arhitekture, a najznačajnijim se otkrićima smatraju ostaci liječničke rezidencije iz 3. stoljeća.[525] Unutar antičke rezidencije, uz ostale nalaze, pronađeno je preko 150 medicinskih instrumenata, među kojima su najbrojniji oni upotrebljavani u zahvatima na kostima i vađenju stranih predmeta iz tijela pa se može zaključiti da su pripadali vojnom liječniku – kirurgu.[526] Vjerojatno zadovoljan pacijent na zid kuće urezao je grafit kao zahvalu svom liječniku koji glasi: "*Eutyches homo bonus*".[527]

IGLA (LAT. *ACUS*)

Igle su svakodnevni uporabni predmeti čiji se izgled nije bitno mijenjao kroz stoljeća. Zbog toga je teško odrediti koje su igle mogle imati medicinsku, a koje utilitarnu svrhu. Antički su liječnici vjerojatno upotrebljavali igle koje su im bile dostupne.[528] Najčešće se pronalaze igle s ušicom, no pronađeni su i primjerci bez ušica.[529] Igle mogu biti napravljene od bronce, željeza ili kosti. Igle s ušicom upotrebljavale su se za šivanje rana i zavoja, dok su one bez ušice vjerojatno korištene za probijanje akni, podizanje vjeđa ili uklanjanje malih tumora očne jabučice.[530] Posebnu vrstu igala čine igle za uklanjanje očne mrene.[531] Poznati primjerci načinjeni su od bronce i imaju tordirani držač. Na jednom kraju završavaju maslinastim zadebljanjem, dok na drugom imaju iglu.[532] U fundusu Antičkog odjela Arheološkog muzeja u Zagrebu nalazi više desetaka primjera jednostavnih višefunkcionalnih igala od bronce, željeza i kosti.

in written sources as basic instruments for many surgical procedures. Also, two groups of items that belong to pharmaceutical inventory are mentioned because they are sometimes found with other medical instruments.

Descriptions are based on medical instruments from the Archaeological Museum in Zagreb and contemporary works by numerous experts researching medicine in ancient Greece and Rome.[524]

EUTYCHES IS A GOOD MAN

Archaeological excavations in Piazza Ferrari in Rimini (1989–2006) unearthed the remains of a surgeon's residence from the 3rd century CE.[525] Apart from other finds, more than 150 different medical instruments were found within the residence. Most of them were used in bone and military surgery suggesting that the owner of the residence was a military physician — surgeon.[526] A satisfied patient scratched graffiti on the wall of the house saying: *"Eutyches homo bonus"*.[527]

NEEDLE (*ACUS*)

Needles are everyday objects and their appearance has not changed throughout history. That is why it is difficult to ascertain which needles were used in medicine. Ancient physicians probably used needles that were available to them.[528] Most numerous are eyed needles, but un-eyed needles have also been found.[529] They can be made of bronze, iron or bone. Eyed needles were used for suturing wounds and sewing bandages, while un-eyed needles were used for puncturing acne, lifting eyelids or removing small tumours on the eyeball.[530] Cataract needles are a separate group.[531] Known examples were made of bronze and have a twisted handle. On one side, they have an olivary end, while on the other a needle.[532] The Greek and Roman Collection of the Archaeological Museum in Zagreb has plenty of simple multifunctional bronze, iron or bone needles.

DOUBLE NEEDLE

A double needle is a simple instrument that is pointed on both ends. The handle can be wider in the middle or twisted, to facilitate handling of the instrument.[533] They were usually made of bronze.[534] This instrument had many uses. Double needles could have been used to cauterize inflamed eyelashes, probe tissue, pierce the skin to determine the type of psoriasis, for cataract removal surgery, and other delicate operations.[535] The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains five double needles. Four are made of bronce, while one is made of bone (85/1).

TUBES AND SYRINGES

This group of instruments is comprised of clysters (*clyster*), ear syringe (*oricularius clyster*), as well as extraction syringes (pyoulkos), catheters, and cannulae (*fistula*).[536] Various types of tubes and syringes were made of copper, bronze, silver or horn.[537] Tubes could be straight or curved, narrow in cross section. They are not always easy to identify since they are mostly made of metal that is susceptible to corrosion processes that close their hollow base, the main functional element of this instrument. Clysters were instruments usually made of metal, cylindrical or funnel-shaped, that narrowed into a thin tube on one end. The wider part of the instrument was short, used to attach a pouch or a bladder.[538] Apart from clysters, true syringes operated by a plunger have also been documented.[539] Some of these instruments have been confirmed by archaeological findings, such as catheters, clysters, and syringes.[540]

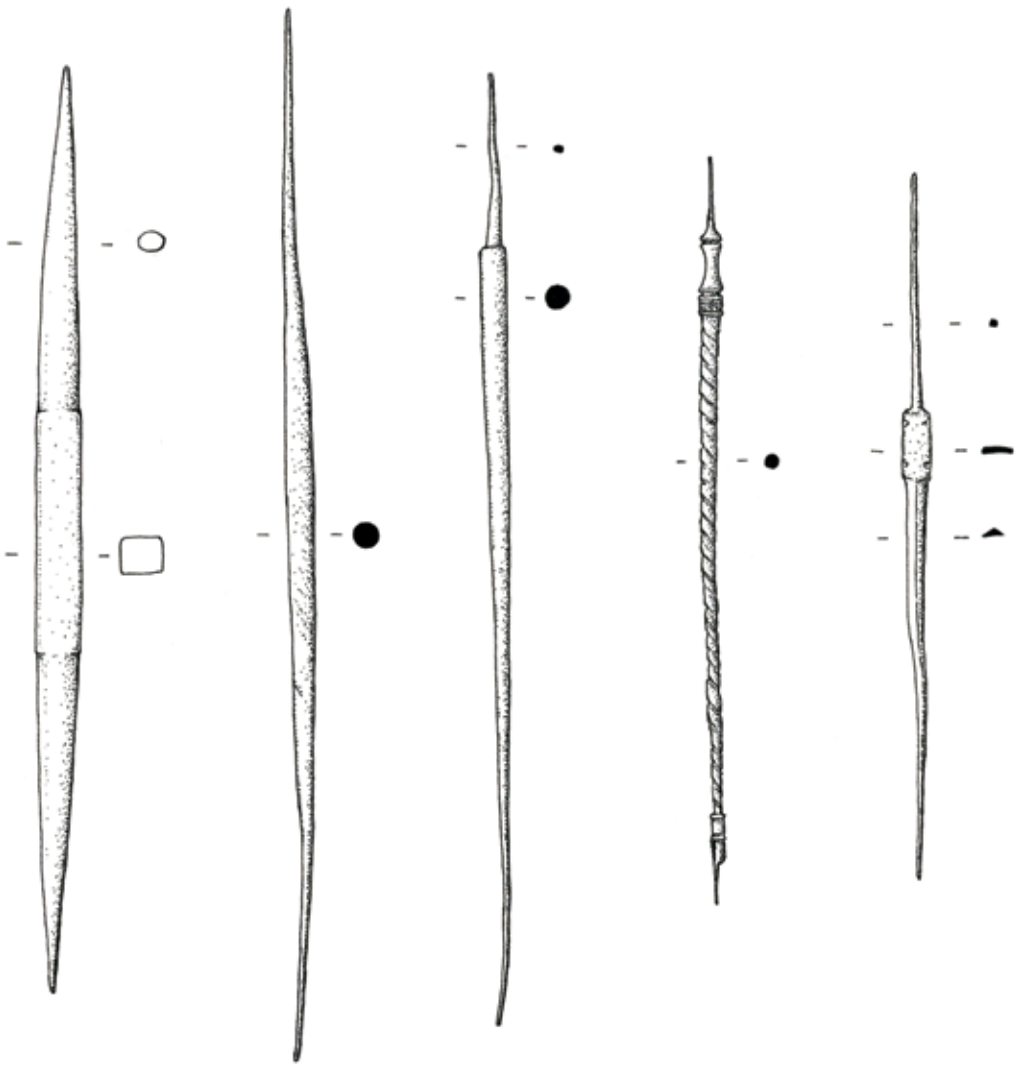
CAUTERY (*FERRAMENTUM*)

Latin name of this instrument suggests that it was usually made of iron. Its main function was to cauterize wounds. This instrument is rarely found during archaeological research, partially because they

524 Milne (1907); Gregl (1982); Gregl (1983); Gregl (1983a); Künzl (1983); Jackson (1994); Ivčević (1997: 8); Giunio (2012); Bliquez (2015); Baker (2009)
525 Ortalli (2009: 32)
526 Jackson (2009: 73–74)
527 Ortalli (2009: 37)
528 Baker (2009: 6)
529 Jackson (1994: 177)
530 Ibid.
531 Milne (1907: 74–75); Künzl (1983: 36–37); Jackson (1994: 177)
532 Feugére et al. (1985); Künzl (1983: 36–37);

DVOSTRUKA IGLA

Dvostruka igla jednostavan je instrument koji je na oba kraja zašiljen. Držač na sredini može biti zadebljan ili tordiran kako bi se olakšalo rukovanje instrumentom.[533] Najčešće su izrađivane od bronce.[534] Uporaba ovog instrumenta bila je raznolika. Dvostruke su se igle mogle koristiti za kauterizaciju upaljenih korijena trepavica, ispitivanje tkiva, probijanje kože kako bi se odredila vrsta psorijaze, uklanjanje očne mrene i druge osjetljive zahvate.[535] U Zbirci rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu nalaze se pet primjeraka dvostrukih igala. Svih pet su različitog oblika. Četiri su izrađene od bronce, a jedna je koštana (sl. 85/1).



Sl. 85. Crtež pet dvostrukih igala, od kojih je svaka drugačije oblikovana. Sve su izrađene od bronce, osim igle br. 1, koja je koštana. (M 1:1, Sisak, 1. – 4. st., K84 – 88)
~ Fig. 85 Drawing of 5 double needles, each with a different form. All are made of bronze, except needle no. 1 which was made of bone. (M 1:1, Sisak, 1st – 4th c., K84 – 88)

were probably seldom manufactured since other medical instruments or utility items could be used for cauterization, such as knives, razors etc.[541] Know cauteries confirm that they varied in form, but that they had a handle and a plate that was used for the cauterization of wounds.[542] Medical instruments described below will show how many of them could have been used for cauterization.

SPATULA (*SPATHOMELA*)

A spatula is an instrument with a long round or polygonal handle. It has a spatula on one end, and olivary ending on the other (sometimes it can be pointed). The spatula can be rectangular, leaf-shaped (with or without a rhomboid extension), triangular or lancet-shaped. There are also examples that have a simple indentation or a notch instead of a spatula. The handle can be smooth or fluted, and decorated in ring-and-disc moulding or rhomboid extensions.[543] They can be made of bronze, silver or bone.[544] Spatulas could have been used for mixing and administering medicines.[545] They were also used for cauterization, throat exams or blunt dissection.[546] Celsus also mentioned using them for treating rectal prolapse, varicocele, and lithotomy.[547] The olivary end has some of the same functions as other medical instruments. From the Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb we have selected a few examples based on the abovementioned types (86, 87, 88).

EAR PROBE *(ORICULARIUM SPECILLUM)*

The ear probe is a simple instrument with a thin, round or polygonal handle that ends with a small recipient on one end, while it is pointed on the other (there are examples of ear probes with blunt endings).[548] Its handle can be smooth, twisted, profiled or have a spindle-shaped enlargement.[549] If the handle is decorated, the ornament is always found in the lower half of the probe, just above the recipient. The ornament was probably functional – it facilitated handling of the ear probe.[550] The oval recipient is small, flat or spoon-shaped, which can be slanted or straight. Ear probes were made of bronze, iron, silver or bone.[551] Due to small dimensions of its recipient, ear probes were used for extracting, mixing and preparation of medicines; cleaning wax, foreign objects or worms from the ear canal; haemorrhoid operation; lithotomy.[552] Due to its numerous applications, ear probes are cosmetic, pharmaceutical and medical tools.[553] In the Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb ear probes are the most numerous type of instruments. They were made of bronze, silver, iron, and bone. We have selected just a few that represent the abovementioned variations in shape and ornamentation (89, 90, 91). The most interesting is an ear probe made of iron whose recipient is shaped like a shell (Inv. no. A–4439–3, 91/5).

DOUBLE OLIVARY END PROBE (*DIPYRENE*)

This probe type is a simple instrument. A straight, thin and undecorated round handle has an olivary end on both sides. Sometimes, one of the olivary ends was perforated.[554] Double olivary end probes were made of bronze.[555] They were used for grinding and mixing ointments, and as cauteries.[556] They could also have been used to create a drip effect for precise dosing of medicine, as well as instruments for probing soft and sensitive tissue, bone, and exploring fistulas.[557] The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains three double olivary end probes (92). One has an interesting perforation on one of the olivary ends (Inv. no. A–4563, 92/2).

533 Gregl (1982: 182); Gostenčnik (2004: 373–374)
534 Jackson (1994: 177); Künzl (2002: 81)
535 Celsus. De medicina VII.7.8B; V.28.19C; VII.7.14D; Hassel, Künzl (1980: 407)

CJEVČICE I INJEKCIJE

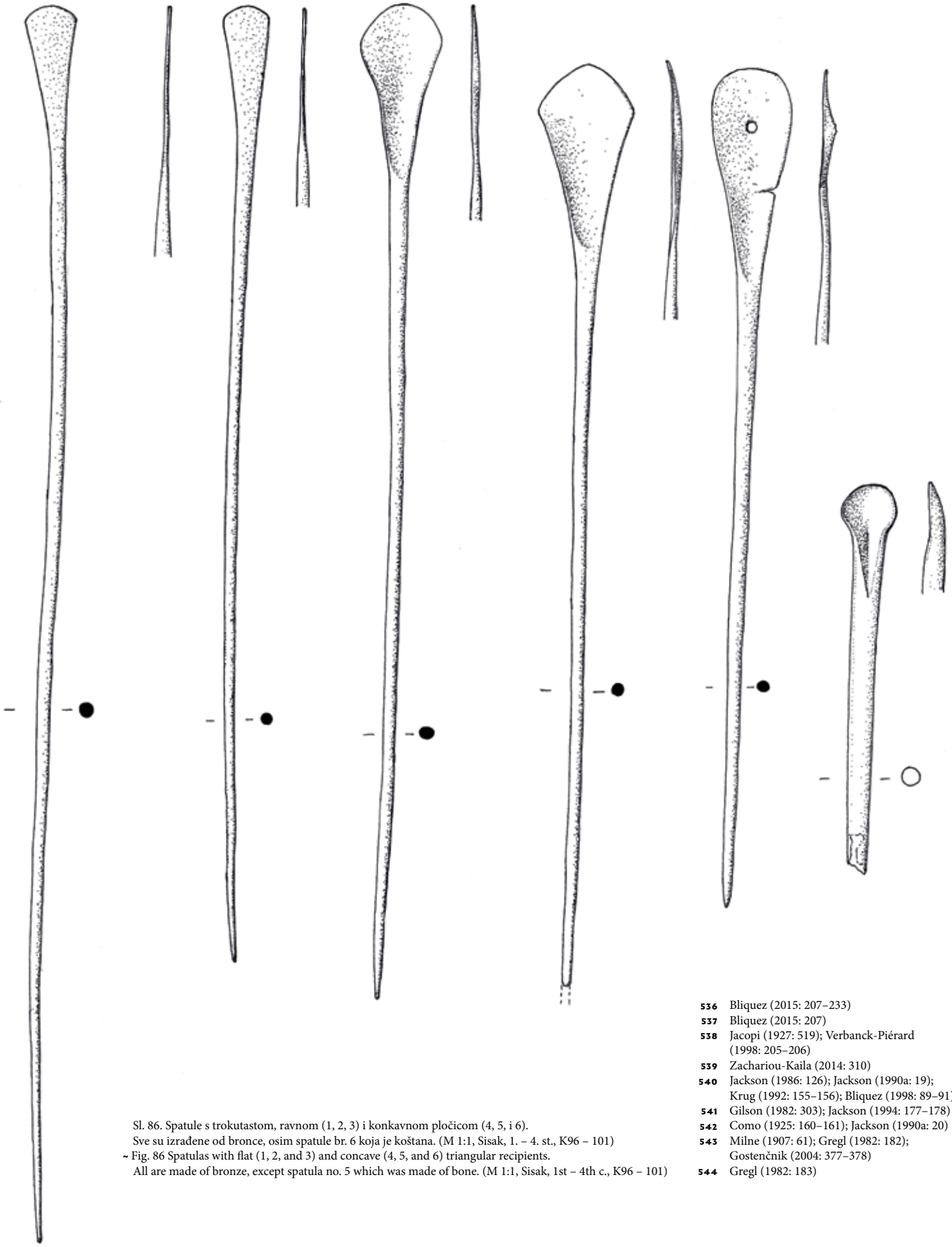
Ovu grupu instrumenata čine injekcije za klistiranje (lat. *clyster*), injekcije za ispiranje maternice, nosne šupljine i uha (lat. *oricularius clyster*), kao i injekcije za ekstrakciju (grč. *pyoulkos*), kateteri i kanile (lat. *fistula*).[536] Različite vrste cjevčica i injekcija izrađivale su se od bakra, bronce, srebra ili roga.[537] Cjevčice mogu biti ravnih ili zakrivljenih oblika te su uske u presjeku. Nije ih uvijek lako prepoznati s obzirom da su većinom rađene od metala koji korozijskim procesima zatvara njihovu šuplju osnovu, glavni funkcionalni element ovog instrumenta. Injekcije su najčešće bile metalni instrumenti cilindričnog ili ljevkastog oblika koji bi se na jednom kraju suzio u tanku cjevčicu. Širi dio instrumenta bio je kratak i na njega se mogla pričvrstiti vrećica čijim bi se pritiskanjem ispuštao lijek.[538] Osim tog oblika, poznate su i injekcije s klipom, kod kojih je širi dio instrumenta dulji, a pomoću klipa tekućina se mogla izvlačiti ili ispuštati.[539] Neki od spomenutih oblika potvrđeni su i arheološkim nalazima, poput katetera, injekcije za klistiranje i injekcije za ekstrakciju.[540]

KAUTERIZATOR (LAT. *FERRAMENTUM*)

Latinski naziv ovog instrumenta implicira da je najčešće bio napravljen od željeza, a glavna svrha ovog instrumenta bila je paljenje rana. Arheološki nalazi kauterizatora iznimno su rijetki, dijelom zbog toga što su, vjerojatno, rijetko izrađivani jer se paljenje rana moglo postići pomoću niza drugih medicinskih instrumenata ili svakodnevnih predmeta, poput noževa, britvi i sl.[541] Kauterizatori pronađeni pri arheološkim istraživanjima potvrđuju kako se radi o instrumentima različitog oblika koji se sastoje od drške koja završava pločicom i koja se nakon zagrijavanja prislanjala na ranu tj. dio tijela koji je trebalo spaliti.[542] U opisima medicinskih instrumenata koji slijede biti će vidljivo kako je dobar dio njih mogao poslužiti kao kauterizator.

SPATULA (LAT. *SPATHOMELA*)

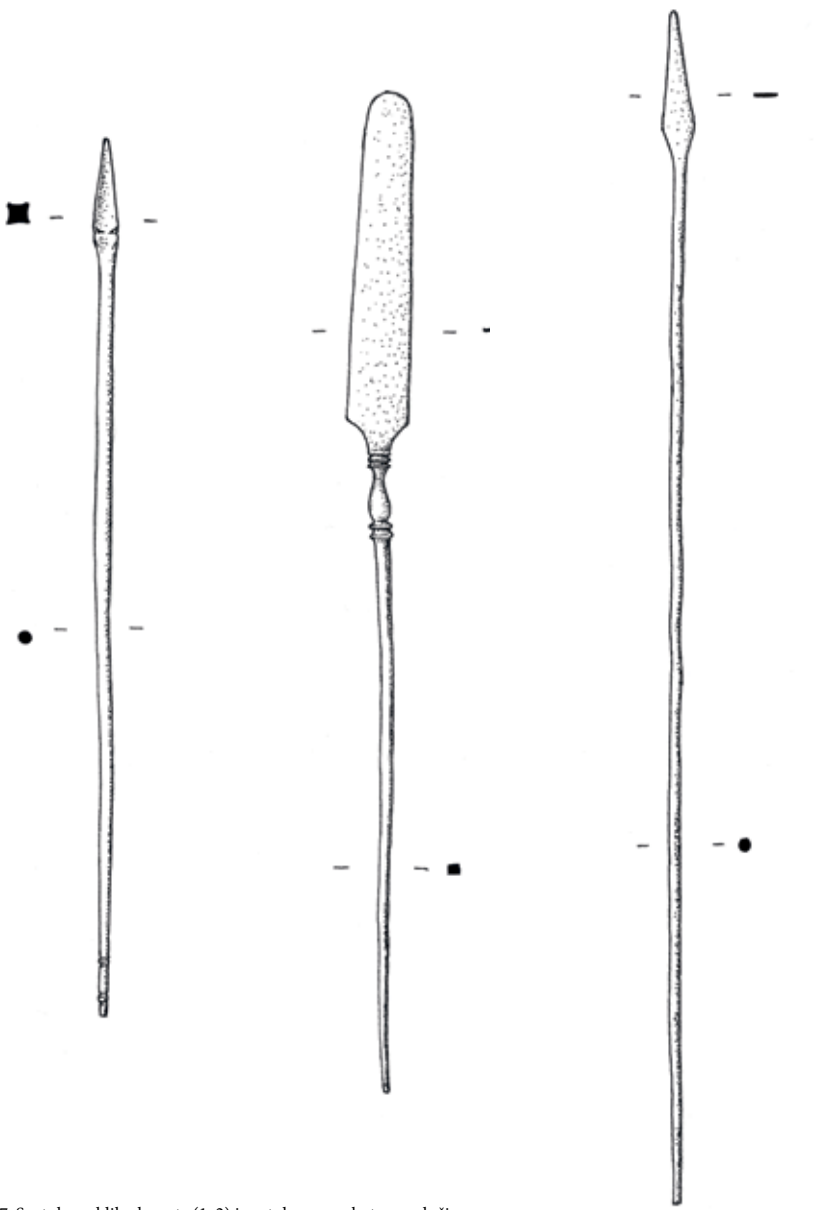
Spatula je instrument s dugačkim držačem okruglog ili poligonalnog presjeka koji na jednom kraju sadrži pločicu, koja može biti različitog oblika, dok drugi kraj, u pravilu, završava zašiljenim vrhom ili maslinastim zadebljanjem. Pločice mogu biti pravokutne, listolike (s rombičnim proširenjem ili bez njega), trokutaste ili u obliku lancete. Postoje i primjerci koji umjesto pločice imaju jednostavno udubljenje ili urez. Tijelo držača spatule može biti glatko ili ukrašeno kaneliranjem, prstenastim zadebljanjima ili rombičnim proširenjem.[543] Mogu biti izrađene od bronce, srebra ili kosti.[544] Spatule su se mogle koristiti za mi-



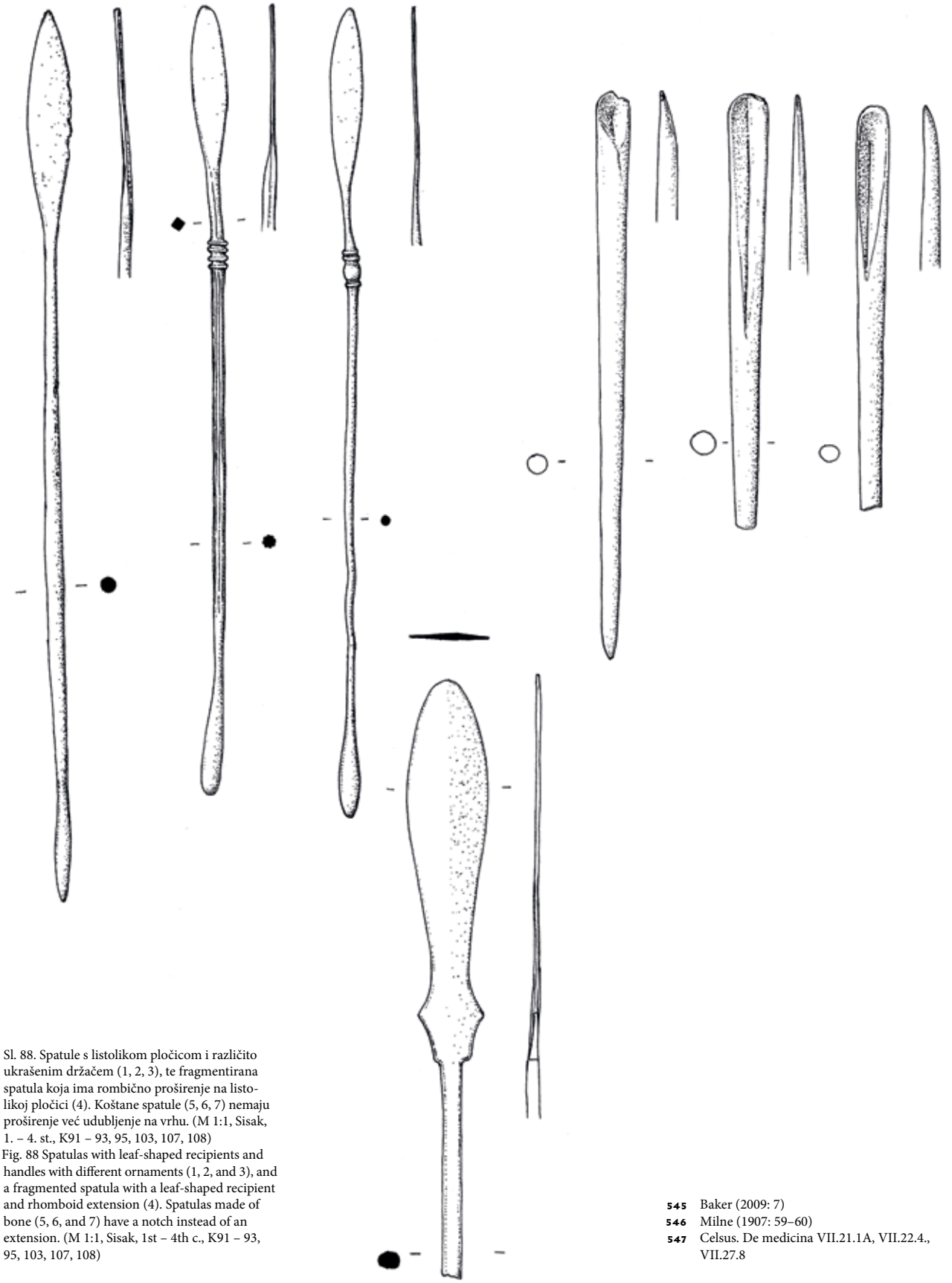
Sl. 86. Spatule s trokutastom, ravnom (1, 2, 3) i konkavnom pločicom (4, 5, i 6).
Sve su izrađene od bronce, osim spatule br. 6 koja je koštana. (M 1:1, Sisak, 1. – 4. st., K96 – 101)
~ Fig. 86 Spatulas with flat (1, 2, and 3) and concave (4, 5, and 6) triangular recipients.
All are made of bronze, except spatula no. 5 which was made of bone. (M 1:1, Sisak, 1st – 4th c., K96 – 101)

536 Bliquez (2015: 207–233)
537 Bliquez (2015: 207)
538 Jacopi (1927: 519); Verbanck-Piérard (1998: 205–206)
539 Zachariou-Kaila (2014: 310)
540 Jackson (1986: 126); Jackson (1990a: 19); Krug (1992: 155–156); Bliquez (1998: 89–91)
541 Gilson (1982: 303); Jackson (1994: 177–178)
542 Como (1925: 160–161); Jackson (1990a: 20)
543 Milne (1907: 61); Gregl (1982: 182); Gostenčnik (2004: 377–378)
544 Gregl (1982: 183)

ješanje lijekova i njihovu primjenu na tijelu.[545] Upotrebljavale su se i za kauterizaciju, pregled grla ili tupu disekciju.[546] Celsus spominje i uporabu spatula u liječenju prolapsa rektuma, proširenja vena skrotuma, a predlaže njihovo korištenje i pri operaciji vađenja kamenca iz mokraćnog mjehura.[547] Maslinasti završetak imao je iste funkcije kao i kod drugih instrumenata. Iz Zbirke rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu izdvojili smo nekoliko primjeraka prema gore navedenoj podjeli pločastog recipijenta (sl. 86, 87, 88).



Sl. 87. Spatule u obliku lancete (1, 2) i spatula s pravokutnom pločicom zaobljenih rubova. (M 1:1, Sisak. 1. – 4. st., K109, 110, 90)
~ Fig. 87 Lancet-shaped spatulas (1 and 2) and a spatula with a rectangular recipient with rounded edges (M 1:1, Sisak, 1st – 4th c., K109, 110, 90)



Sl. 88. Spatule s listolikom pločicom i različito ukrašenim držačem (1, 2, 3), te fragmentirana spatula koja ima rombično proširenje na listolikoj pločici (4). Koštane spatule (5, 6, 7) nemaju proširenje već udubljenje na vrhu. (M 1:1, Sisak, 1. – 4. st., K91 – 93, 95, 103, 107, 108)

~ Fig. 88 Spatulas with leaf-shaped recipients and handles with different ornaments (1, 2, and 3), and a fragmented spatula with a leaf-shaped recipient and rhomboid extension (4). Spatulas made of bone (5, 6, and 7) have a notch instead of an extension. (M 1:1, Sisak, 1st – 4th c., K91 – 93, 95, 103, 107, 108)

545 Baker (2009: 7)
546 Milne (1907: 59–60)
547 Celsus. De medicina VII.21.1A, VII.22.4., VII.27.8

UŠNA SONDA (LAT. *ORICULARIUM SPECILLUM*)

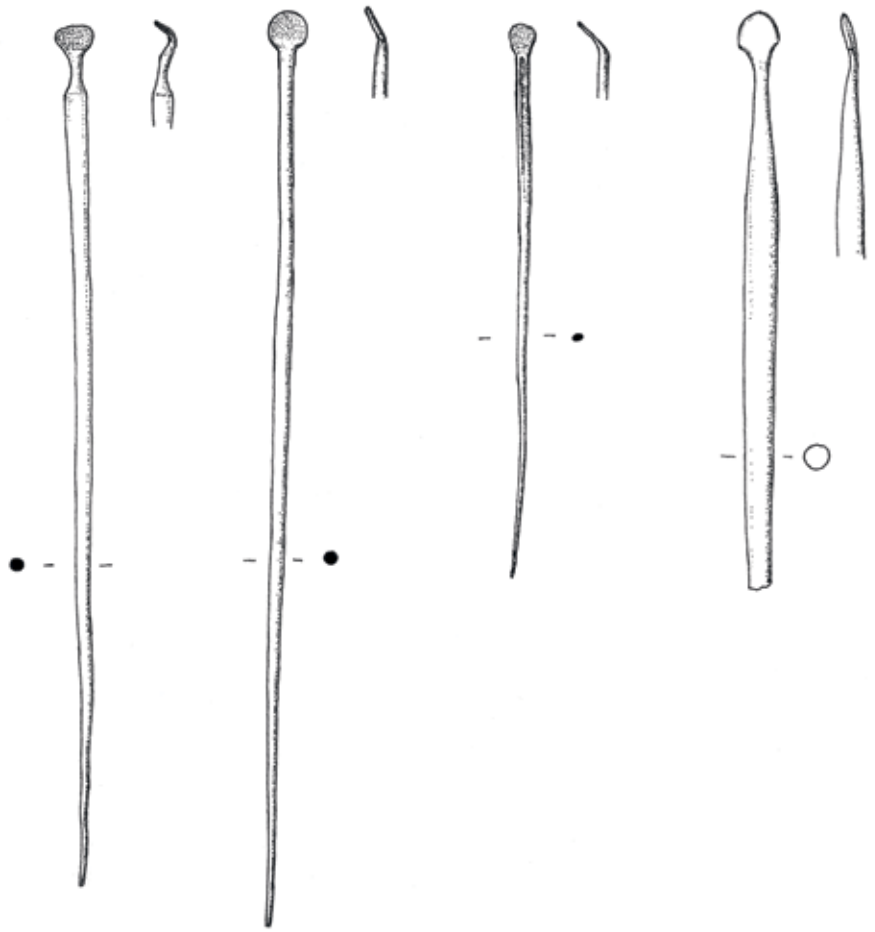
Ušna je sonda instrument jednostavnog oblika koji se sastoji od tankog držača okruglog ili poligonalnog presjeka, koji na jednoj strani završava malom pločicom, dok je drugi kraj zašiljen (u rijetkim je slučajevima završetak tup).[548] Tijelo može biti glatko ili ukrašeno tordiranjem, prstenastim zadebljanjima ili vretenastim proširenjima.[549] Ako je tijelo držača ukrašeno, ukras se gotovo uvijek nalazi na donjoj polovici sonde, bliže pločici. Ukras je vjerojatno imao funkciju olakšavanja držanja sonde prilikom upotrebe.[550] Ovalna pločica sonde malih je dimenzija, ravnog ili žličastog oblika te je postavljena pod kutom u odnosu na držač, a rjeđe je u istoj ravnini s držačem. Sonde su mogle biti izrađene od bronce, željeza, srebra ili kosti.[551] Zbog malih dimenzija pločice, sonde su se upotrebljavale za vađenje, miješanje i primjenu lijeka, čišćenje ušnoga kanala od voska, stranih tijela ili crva, operaciju hemoroida, vađenje kamenca iz mokraćnog mjehura.[552] S obzirom na mogućnosti uporabe, sonde su podjednako dio kozmetičkog, farmaceutskog i liječničkog pribora.[553] U Zbirci rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu ušne sonde su nesumnjivo najbrojniji tip instrumenta. Ovdje smo izdvojili samo neke, koje obuhvaćaju gore navedene tipove oblika i ukrasa (sl. 89, 90, 91), kao posebnu izdvajamo željeznu ušnu sondu s recipijentom u obliku školjke (inv. br. A–4439–3, sl. 91/5).

DVOSTRUKA SONDA S MASLINASTIM ZAVRŠECIMA (LAT. *DIPYRENE*)

Ova vrsta sonde instrument je jednostavnog oblika. Ravan, tanak i neukrašen držač okruglog presjeka na oba kraja ima maslinasto zadebljanje. Neki su primjerci ovog instrumenta, na jednom od maslinastih završetaka, perforirani.[554] Dvostruke sonde izrađivale su se od bronce.[555] Upotrebljavale su se za drobljenje i miješanje lijekova te za paljenje rana.[556] Mogle su se upotrebljavati i za precizno doziranje lijekova kapanjem na određeno mjesto, kao i za ispitivanje mekih i osjetljivih tkiva, upaljenih kostiju te fistula.[557] U Zbirci rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu nalaze se tri primjerka brončanih dvostrukih sondi (sl. 92). Izdvajamo sondu koja ima perforaciju na maslinastom završetku (inv. br. A–4563, sl. 92/2).

LISTOLIKA SONDA (LAT. *CYATHISCOMELA*)

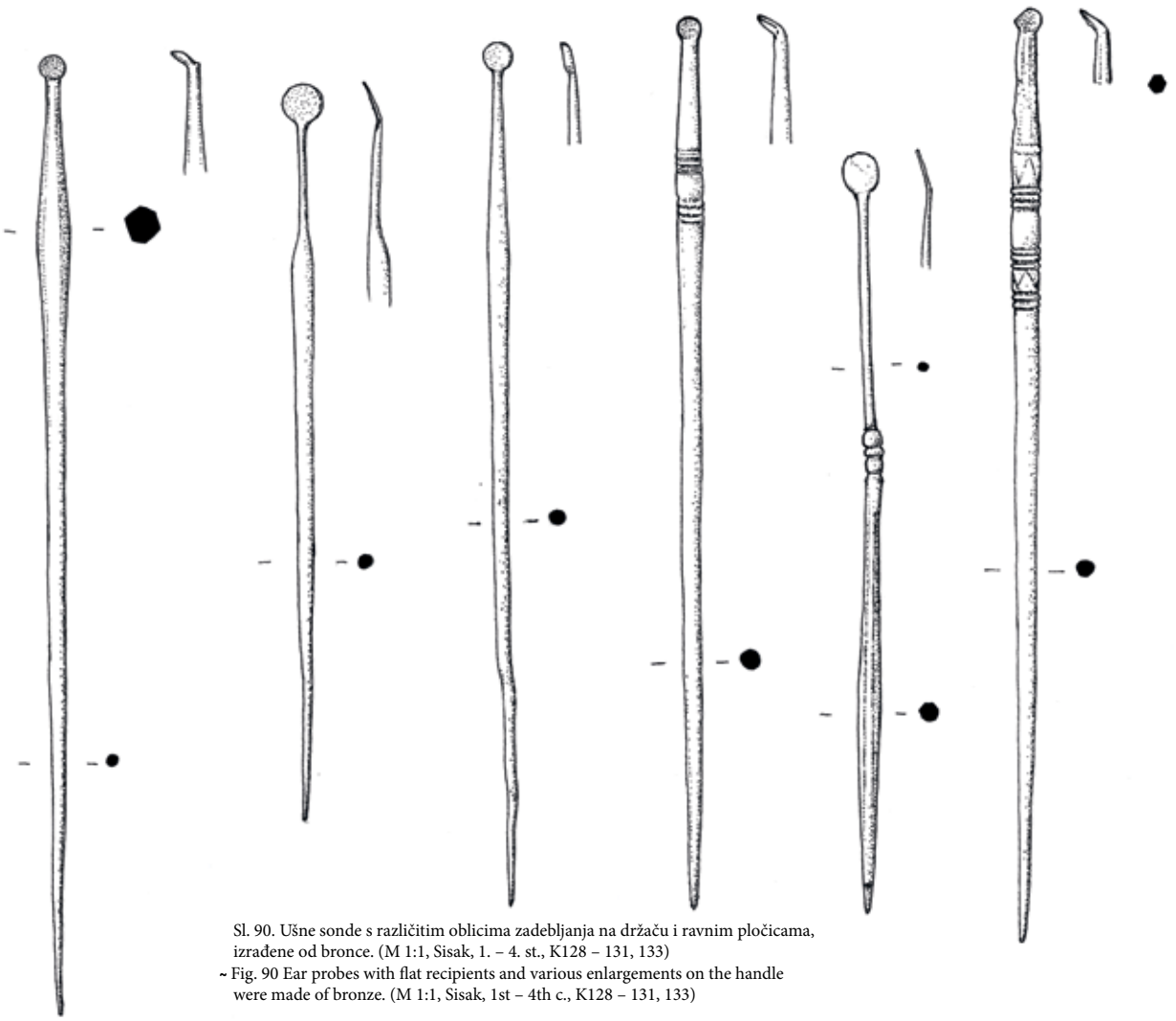
Listolika je sonda instrument s tankim držačem okruglog ili poligonalnog presjeka, koji na jednom kraju završava žličicom, dok na drugom kraju ima masli-



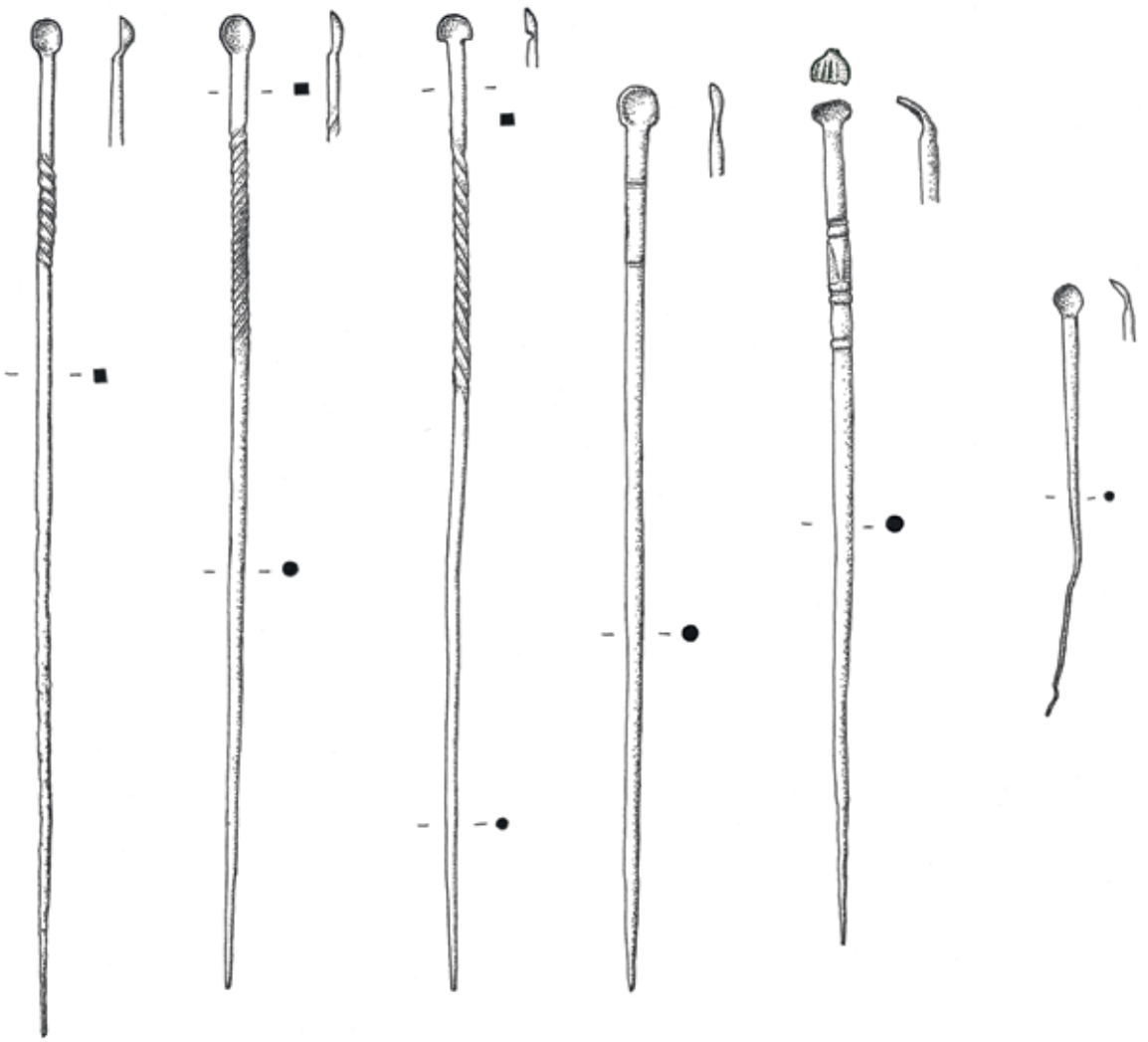
Sl. 89. Ušne sonde bez ukrasa, izrađene od srebra (1, 2), bronce (3) i kosti (4), s ravnom pločicom postavljenom pod različitim kutom u odnosu na držač. (M 1:1, Sisak, 1. – 4. st., K115, 119, 126, 124)
~ Fig. 89 Undecorated ear probes made of silver (1 and 2), bronze (3) and bone (4) with flat recipients positioned at various angles to the handle. (M 1:1, Sisak, 1st – 4th c., K115, 119, 126, 124)

548 U starijoj literature često se spominje i naziv auriscalpium (prema Milne, 1907: 63).
~ Also known as auriscalpium (according to Milne, 1907: 63).
Gregl (1982: 180); Künzl (1983); Jackson (1994: 181); Bliquez (2015: 130)
549 Ibid.
550 Gregl (1982: 180)
551 Milne (1907: 63–68); Künzl (1983)
552 Celsus. De medicina VI.7, VII.30.3D, VII.26.1C
553 Milne (1907: 63–68); Gregl (1982: 179); Künzl (1983); Bliquez (2015: 138)
554 Künzl (1983)
555 Jackson (1986: 163)
556 Gregl (1982: 182)
557 Celsus. De medicina VIII.2.3 i V.28.12C; Barker (2009: 6–7); Gostenčnik (2013: 104)

nasto zadebljanje. Tijelo držača može biti glatko ili ukrašeno. Ukras na držaču može biti ljuskast, tordiran ili kaneliran, a dodatan ukras mogu biti prstenasta zadebljanja ili pločica sa zarezima.[558] Ukras je vjerojatno bio funkcionalan – olakšavao je držanje listolike sonde prilikom upotrebe.[559] Žličica je uska i listolikog oblika. Listolike su sonde u pravilu bile izrađene od bronce.[560] Ove su sonde imale višestruke funkcije. Maslinasti završetak upotrebljavao se za razdvajanje i ispitivanje osjetljivih tkiva i dijelova anatomije, a mogao se upotrebljavati i za paljenje rana.[561] Listolika žličica, osim za vađenje i primjenjivanje lijekova, mogla je služiti za kiretažu, struganje tkiva te za lakše vađenje kamenca iz mokraćnog mjehura.[562] Osim toga, neki autori navode kako je, između ostalog, mogla služiti za navođenje skalpela i sprječavanje nepotrebnih oštećenja te za podizanje slomljenih kostiju.[563] Iz Zbirke rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu prikazani su najtipičniji primjerci, po kriteriju ukrasa i oblika, uključujući i reprezentativnu listoliku sondu s pečatom "CARANTI" (sl. 93).[564]



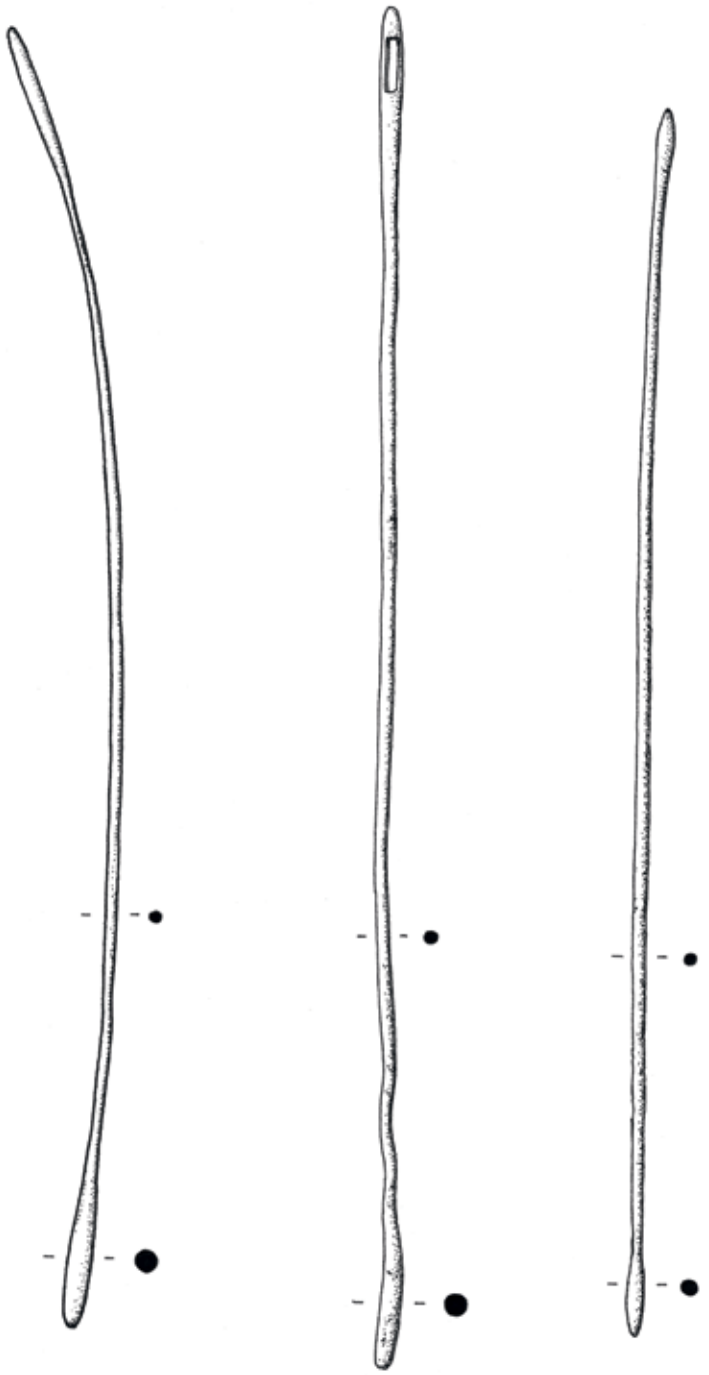
Sl. 90. Ušne sonde s različitim oblicima zadebljanja na držaču i ravnim pločicama, izrađene od bronce. (M 1:1, Sisak, 1. – 4. st., K128 – 131, 133)
~ Fig. 90 Ear probes with flat recipients and various enlargements on the handle were made of bronze. (M 1:1, Sisak, 1st – 4th c., K128 – 131, 133)



Sl. 91. Ušne sonde kojima su pločice konkavno oblikovane. Držači su im tordirani (1, 2, 3), ukrašeni urezima i prstenastim zadebljanjima (4, 5) ili neukrašeni (6). Sve su izrađene od bronce, osim jedne željezne (5), kojoj je žličasta pločica oblikovana poput školjke. (M 1:1, Sisak, 1. – 4. st., K147, 146, 145, 149, 148, 150)

~ Fig. 91 Ear probes with concave recipients. Their handles are twisted (1, 2, and 3), decorated with incisions and ring moulding (4 and 5) or undecorated (6). All were made of bronze, except one made of iron (5) with a shell-shaped recipient. (M 1:1, Sisak, 1st – 4th c., K147, 146, 145, 149, 148, 150)

558 Gregl (1982: 180)
559 Ibid.
560 Milne (1907: 61–63); Gregl (1982: 181); Künzl (1983)
561 Milne (1907: 61–63); Gregl (1982: 180);
562 Jackson (1994: 181)
563 Jackson (1994: 181); Milne (1907: 62)
564 Gregl (1982: 180); Bliquez (2003: 328)
564 Gregl (1983a)



Sl. 92. Dvostruke sonde s maslinastim završecima izrađene od bronce, od kojih jedna ima pravokutnu perforaciju na jednom od maslinastih završetaka. (M 1:1, Sisak, 1. – 4. st., K151 – 153)
~ Fig. 92 Double olivary end probes made of bronze, one has a rectangular perforation on one of the olivary ends. (M 1:1, Sisak, 1st – 4th c., K151 – 153)

SPOON PROBE (*CYATHISCOMELA*)

The spoon probe is an instrument with a thin round or polygonal handle that has a spoon on one side and olivary end on the other. The handle can be smooth, twisted, scaled or fluted, with additional ring-and-disc moulding or a lamina with notches.[558] The decoration was probably functional – facilitating handling of the probe.[559] The spoon is narrow and leaf-shaped. Spoon probes were usually made of bronze.[560] These probes had several functions. The olivary end could be used for blunt dissection and cauterization.[561] The leaf-shaped spoon, apart from extracting and applying remedies, could have been used as a curette, for scraping, and in lithotomy.[562] However, some authors state that it could have been used as a guide for scalpel blades to prevent unnecessary tissue damage and for lifting fractured bones.[563] From the Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb selection is made based on ornamentation and shape, and have included a spoon probe with a workshop mark *CARANTI* (93).[564]

CUPPING VESSELS (*CUCURBITULA*)

Cupping vessels have different shapes, based on the material used to make them. Vessels made of horn had openings on the bottom and the top of the horn. The wider opening would be placed against the skin, while a physician would suck air through the top opening to create a vacuum.[565] Bronze cupping vessels have a characteristic round shape. A piece of burning material was placed inside them to create a vacuum. The vessel's round shape prevented contact between the skin and the burning material.[566] Apart from horn and bronze, Antyllos (2nd century CE) mentions glass cupping vessels.[567] They are often referred to in ancient sources, and bronze cupping vessels are often depicted on stone monuments and coins.[568]

SCALPEL (*SCALPELLUS*)

The basic form of the scalpel is an instrument composed of two parts – a handle and a blade, similar to modern scalpels with removable blades. The scalpel handle has, on one end, a blunt leaf-shaped blade, and on the other side, it has a slot for inserting blades.[569] Blunt leaf-shaped blades can be narrow and long, sometimes exceptionally long, as well as short and rounded.[570] Based on the shape of the handle, we can distinguish two most common forms – short and long handles.Short handles are usually massive, rectangular or polygonal in cross-section. They could be decorated, from simple carved circles to inserts of precious metals.[571] Long polygonal handles are usually decorated with ring-and-disc moulding, often on the bottom part of the instrument, closer to the slot for inserting blades.[572] Scalpel blades were made of steel or iron, and are rarely found at archaeological sites due to their composition. They could vary in size and shape: convex, straight, angled, concave, hooked, concave-convex, straight-convex and convex-convex. Ancient sources recommend using scalpels for various medical procedures. Blunt leaf-shaped blades were used for blunt dissection, lifting of tissue and cauterization.[573] Sharp blades were useful in cutting and removing tissue, hernia operations, and lithotomy, to name just a few.[574] The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains 6 bronze scalpel handles (94). Five handles are short, and one has slots for inserting blades on both ends – one slot has a blunt linear blade inserted (Inv. no. A–6475–5, 94/3). Also, one round scalpel handle ends in a blunt leaf-shaped blade with a perforation (Inv. no. A–6207, 94/6).

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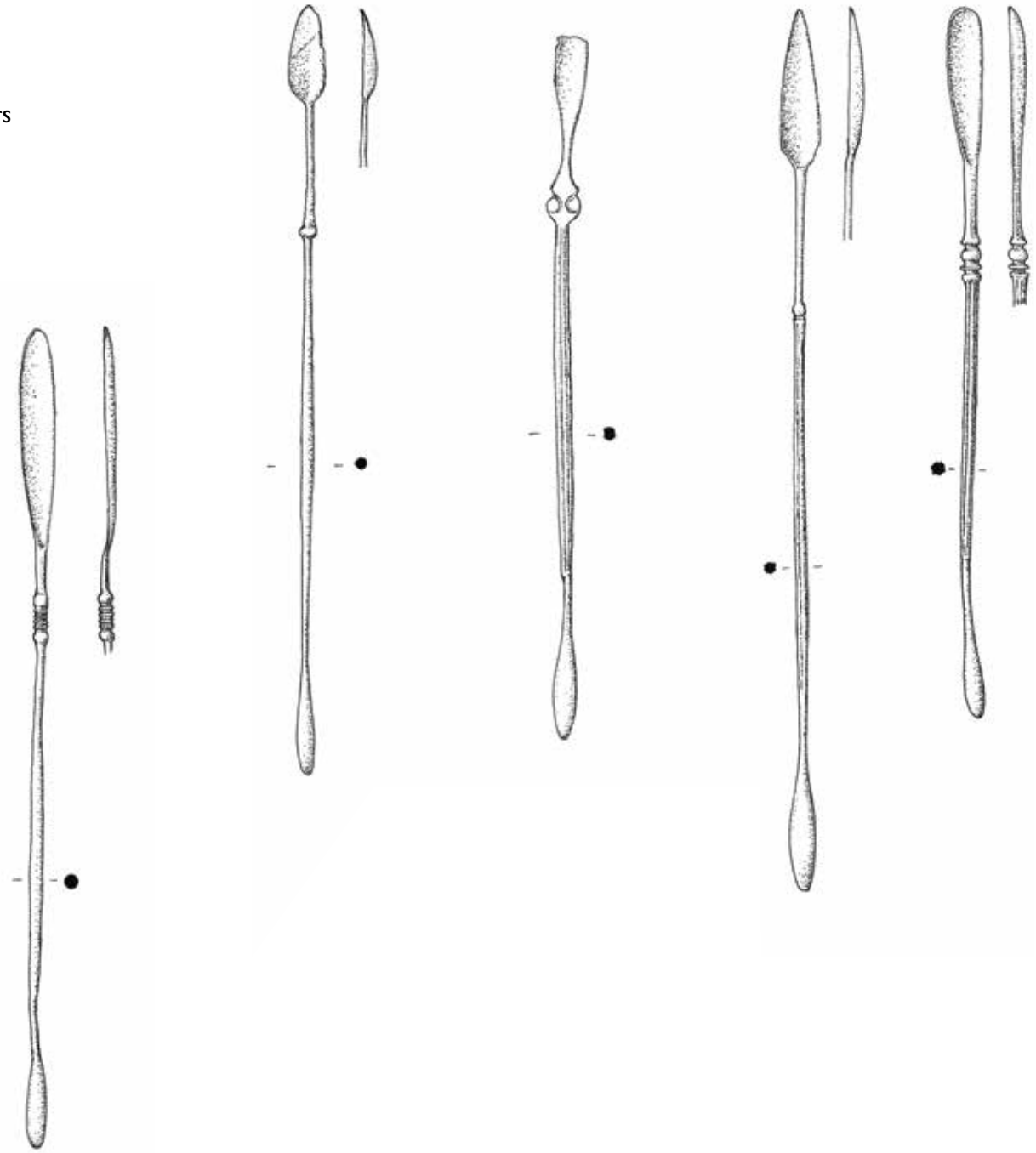
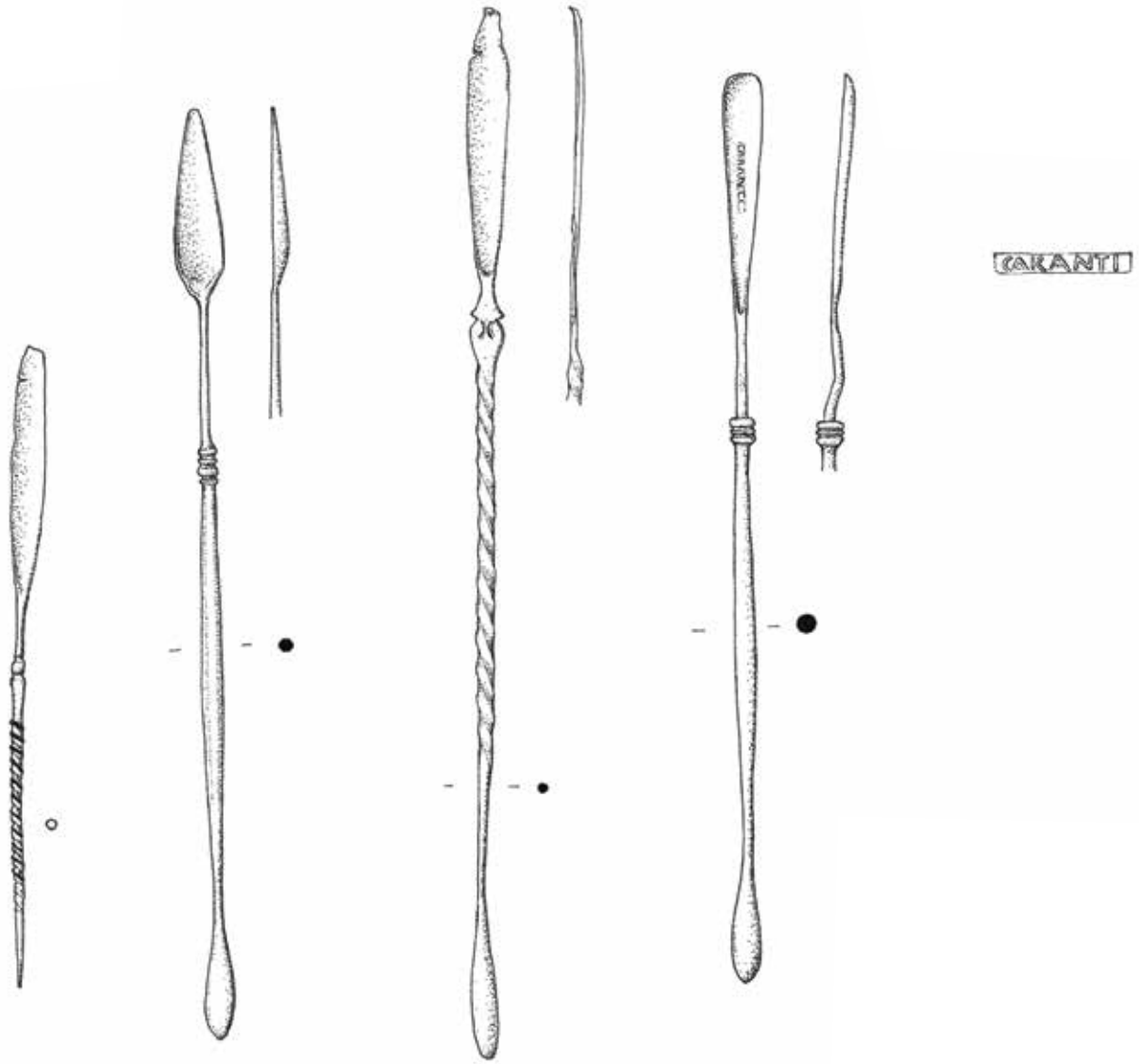
GREEK AND ROMAN MEDICAL INSTRUMENTS





Sl. 93. Listolike sonde izrađene od bronce, s različito ukrašenim držačima, te jedini primjerak iz fundusa s pečatom CARANTI unutar žličastog listolikog recipijenta. (M 1:1, Sisak, 1. – 4. st., K156, 155, 159, 158, 164, 163, 161, 165)

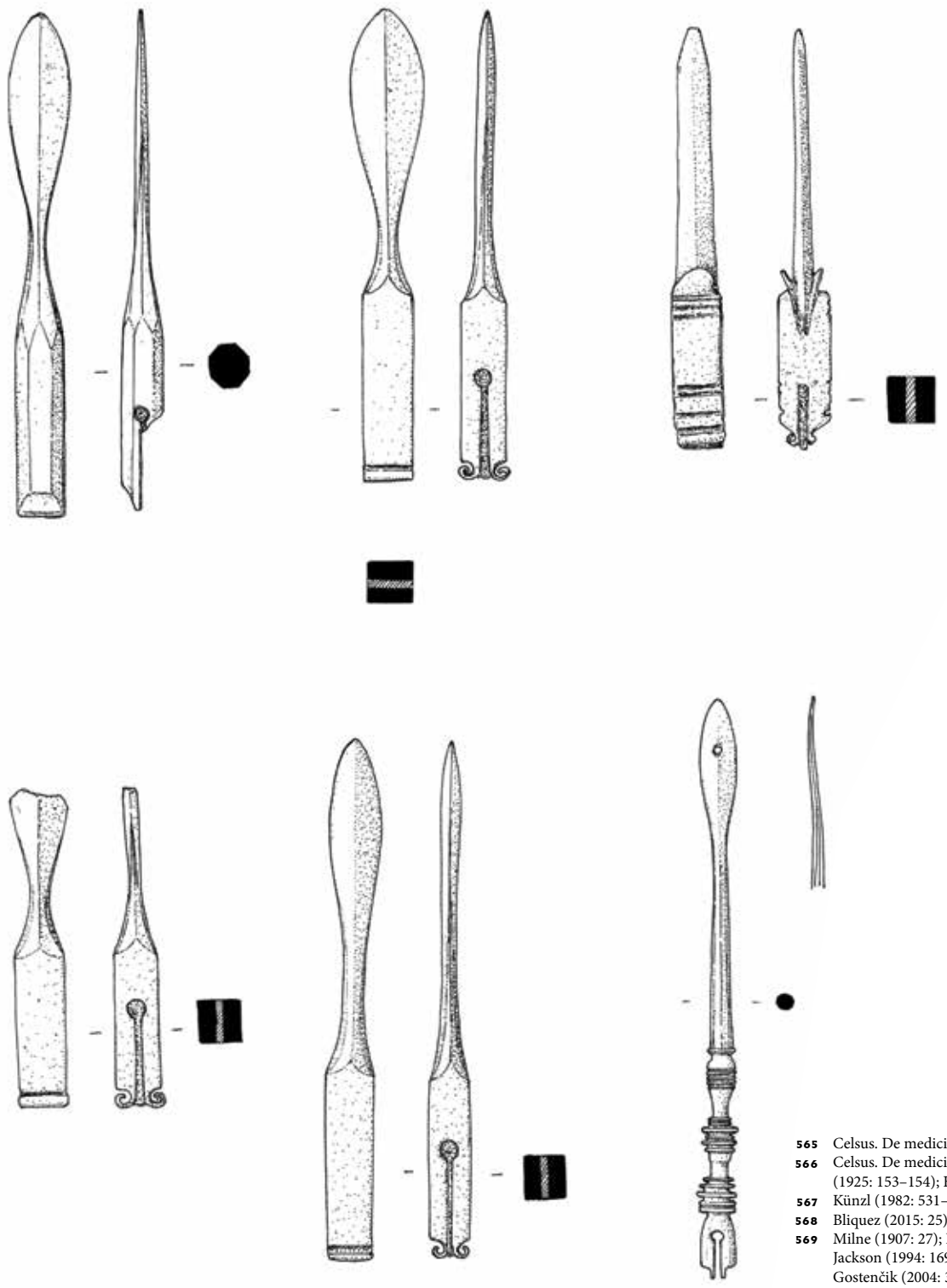
~ Fig. 93 Bronze spoon probes with handles with different ornaments, including the only example in the Collection with a workshop stamp CARANTI inside the leaf-shaped recipient. (M 1:1, Sisak, 1st – 4th c., K156, 155, 159, 158, 164, 163, 161, 165)

POSUDE ZA PUŠTANJE KRVI (LAT. *CUCURBITULA*)

Posude za puštanje krvi javljaju su u nekoliko osnovnih oblika koji uglavnom ovise o vrsti materijala od kojih su izrađivane. One načinjene od roga, imale su otvor na dnu i na vrhu roga. Širi otvor stavljao bi se na kožu, a kroz uži otvor liječnik je isisavao zrak kako bi stvorio vakuum potreban za zahvat.[565] Brončane posude za puštanje krvi imaju karakterističan trbušasti oblik s užim otvorom. Unutar trbušastog dijela stavljala bi se zapaljiva tvar kako bi se stvorio vakuum. Uzak otvor sprječavao je kontakt kože i zapaljenog materijala. Osim roga i bronce, Antilos (2. st.) spominje i staklo kao materijal od kojeg su mogle biti izrađene posude za puštanje krvi.[567] Njihova se uporaba često spominje u antičkim izvorima, a brončane posude nerijetko su prikazivane na kamenim spomenicima i novcu.[568]

SKALPEL (LAT. *SCALPELLUS*)

Osnovni oblik skalpela predstavlja instrument sastavljen je od dva dijela – držača i oštrice. Funkcionalno je osmišljen poput današnjih skalpela, na način da se oštrica mogla odvojiti od držača, radi zamjene ili oštrenja. Držač s gornje strane ima tupo listoliko proširenje, dok na donjoj strani ima utor za prihvat oštrice.[569] Listolika proširenja javljaju se u različitim izvedbama, od uskih i dugih, ponekad izrazito dugih, sve do kratkih i masivnih oblika.[570] Prema obliku držača možemo razlikovati dva najčešća oblika skalpela, onaj s kratkim i onaj s dugim držačima. Kratki su držači obično masivni, četvrtastog ili poligonalnog presjeka. Mogli su biti ukrašeni različitim ukrasom, od jednostavnih urezanih krugova do složenih oblika i umetanja plemenitih metala.[571] Dugi držači poligonalnog presjeka najčešće su ukrašeni nizom prstenastih ukrasa, uglavnom u donjem dijelu instrumenta, bliže utoru za prihvat oštrice.[572] Oštrice su bile izrađivane od čelika ili željeza, a zbog svog se sastava rjeđe pronalaze na arheološkim lokalitetima. Mogle su biti različitih veličina i oblika: ravne, konveksne, konkavne, kukaste i sl. U antičkim izvorima skalpele preporučuju za najrazličitije vrste medicinskih zahvata. Listoliko proširenje drške koristilo se za tupu disekciju, podizanje tkiva i paljenje rana.[573] Oštrica je bila korisna pri bilo kakvom zarezivanju, rezanju i odstranjivanju, od zarezivanja kože i drugih tkiva do primjene u operacijama bruha ili uklanjanja kamenca u mokraćnom mjehuru.[574] U Zbirci rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu nalazi se 6 primjeraka brončanih držača skalpela. Pet držača oblikom odgovara gore opisanim kratkim držačima. Između njih treba izdvojiti jedan četvrtasti primjerak s utorima na oba kraja. Kod njega je, naime, u jedan utor umetnuta oštrica koja nije sačuvana, a u drugi je utor umetnut tupi linearni nastavak (Inv. br. A–6475–5, sl. 94/3).



Sl. 94. Držači skalpela različitih oblika, izrađeni od bronce. Na prikazu presjeka vidljiv je utor u koji se umetala željezna oštrica skalpela. (M 1:1, Sisak, 1. – 4. st., K166 – 171)

~ Fig. 94 Various scalpel handles made of bronze. The cross-section shows the slot for inserting an iron or steel scalpel blade. (M 1:1, Sisak, 1st – 4th c., K166 – 171)

565 Celsus. De medicina. II.11.2.

566 Celsus. De medicina. II.11; Como (1925: 153–154); Künzl (1982: 513–526)

567 Künzl (1982: 531–532); Jackson (1994: 183)

568 Bliquez (2015: 25)

569 Milne (1907: 27); Künzl (1983: 15–16); Jackson (1994: 169–171); Ivčević (1997: 8); Gostenčik (2004: 375–376)

570 Künzl (1983: 15)

571 Künzl (1983: 15–16); Künzl (2002: 36–37); Krause (2012: 163–164)

572 Künzl (1983: 15–16); Gibbins (1989: 7–10); Gostenčnik (2013: 100)

573 Ibid.

574 Jackson (1994: 169–171)

KLIJEŠTA (LAT. *FORCEPS*)

U antičkoj se medicini upotrebljavalo nekoliko vrsta kliješta, no osnovni oblik antičkih kliješta odgovara njihovom današnjem obliku. Dva kraka, djelomično svinuta, međusobno su dijagonalno spojena, najčešće nekom vrstom vijka. Jedan završetak krakova predstavlja držač, dok drugi kraj završava radnom površinom za hvat predmeta. Ono što razlikuje kliješta i određuje njihovu funkciju upravo su ti radni dijelovi. Kliješta su najčešće izrađena od željeza i bronce. Zubarska kliješta imaju izrazito čvrste završetke krakova koji su mogli imati udubljenje za prihvat zuba.[575] Ovaj je tip kliješta gotovo uvijek izrađen od željeza.[576] Kliješta za kosti imaju ravne ili zakrivljene završetke krakova s izduženom i rebrastom površinom za hvatanje kako bi što sigurnije uhvatili kost i fragmente kostiju.[577] Posebna vrsta kliješta bila su *staphylagra*, kliješta za amputaciju nepčane resice (uvule) i hemoroida.[578] Funkcionalni je završetak bio nazubljen kako bi se specifični zahvati mogli precizno izvesti.[579] Ako pacijent nije mogao izdržati bol pri ovim zahvatima, upotrebljavao se sličan instrument, *staphylocaustes*, čiji je funkcionalni kraj bio izdubljen, te se upotrebljavao za nanošenje kaustičnog lijeka koji bi spalio uvulu ili hemoroid.[580]

KUKA (LAT. *HAMUS*)

Oblik ovog instrumenta također je jednostavan. Ravan držač, koji je mogao biti ukrašen, svija se na jednom ili na oba kraja. Svinuti dio, prema svom oblikovanju, određuje funkciju kuke. Iz pisanih i arheoloških izvora poznate su dvije osnovne vrste kirurških kuka – oštre i tupe kuke. Oštre kuke (lat. *hamulus acutus*) na jednom kraju imaju oštar svinuti završetak. Tupe su kuke (lat. *hamus retusus*) obično imale okrugli držač koji je mogao imati tupi svinuti završetak jednom ili na oba kraja.[581] Ponekad se nalaze tupe kuke koje su na drugom kraju zašiljene ili imaju oštri završetak.[582] Kuke su najčešće izrađivane od bronce. Oštre su se kuke upotrebljavale za pridržavanje tkiva i otvaranje rana kako bi liječnik mogao izvesti potreban zahvat.[583] Za razliku od njih, tupe su kuke bile pogodne za osjetljivije zahvate poput podizanja krvnih žila ili vađenja stranih tijela iz uha.[584] Posebna je vrsta tupe kuke, kuka za litotomiju (lat. *uncus*), koja je na jednom kraju proširena te savijena, a unutrašnja joj je strana grubo obrađena.[585] Tako obrađena kuka bila je posebno pogodna za vađenje kamenca iz mokraćnog mjehura, dok je glatka obrada s vanjske strane štitila meka tkiva u unutrašnjosti tijela.[586] U fundusu Antičkog odjela Arheološkog muzeja u Zagrebu nalazi se šest primjeraka tupih kuka; sve su brončane i manjih dimenzija. Četiri su ukrašene mrežastim ukrasom (sl. 95).

Sl. 95. Tupe brončane kuke na svinutim završetcima, koje imaju urezan mrežasti ukras. (Sisak, 1. – 4. st., K172 – 175)
~ Fig. 95 Bronze blunt hooks with bent ends and reticular decoration. (Sisak, 1st – 4th c., K172 – 175)

FORCEPS (*FORCEPS*)

Ancient physicians knew several types of forceps, but their basic shape is similar to their modern form. Two partially bent arms are joined in the centre by a screw. One side of the arm is used as a handle, while the other side contains a functional ending used for holding. These functional endings define different types of forceps. Forceps are usually made of iron or bronze. Dental forceps usually have powerful jaws, sometimes with an indentation for the tooth.[575] They were almost exclusively made of iron.[576] Forceps for removing bones and missiles have straight or curved serrated jaws for a steady grip.[577] Special forceps called *staphylagra* were used in the removal of the uvula and haemorrhoids.[578] Jaws of the instrument were toothed to crush the uvula.[579] If the patient was unable to bear the pain of the procedure, physicians could use similar forceps, *staphylocaustes*, with ends that were hollowed out in the centre. They were used for applying a caustic medicament to burn the uvula or a haemorrhoid.[580]

HOOKS (*HAMUS*)

The shape of this instrument is also simple. A straight handle, that can be decorated, is bent on one or both ends. The bent part defines the function of the hook. Two basic hook types are known from written and archaeological sources – sharp and blunt hooks. Sharp hooks (*hamulusacutus*) have a bent and pointed end. Blunt hooks (*hamusretusus*) usually have a long handle that ended on one or both sides in a bent blunt end.[581] There are examples of blunt hooks with pointed or sharp end on the other side.[582] Hooks were usually made of bronze. Sharp hooks were used to hold tissue and open wounds to enable operations.[583] Blunt hooks were used in more delicate operations such as raising veins or removing foreign objects from ears.[584] Lithotomy hook (*uncus*) is a special type of instrument that is roughened on one side.[585] This type of hook was designed for removing bladder stones, while its smooth side would prevent damage to the soft tissue in the body.[586] The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains six blunt hooks made of bronze. They are small and four of which are decorated with reticular incisions (95).

575 Jackson (1994: 175–176); Bliquez (2015: 233)
576 Künzl, Weber (1991: 102)
577 Jackson (1994: 176); Künzl (1999: 63)
578 Jackson (1994b: 172)
579 Baker (2009: 4)
580 Jackson (1994a: 169–170); Künzl (2002: 43)
581 Jackson (1994b: 172)
582 Jackson (1994b: 172); Künzl (2002: 39)
583 Milne (1907: 87); Jackson (2004: 172)
584 Celsus. De medicina. VII.5.1C; VI.7.9A–B
585 Künzl (1983a: 487–490); Jackson (1994: 173); Künzl (2002a: 97–98); Baker (2009: 4–5)
586 Baker (2009: 4–5)

TREPAN (LAT. *MODIOLUS*)

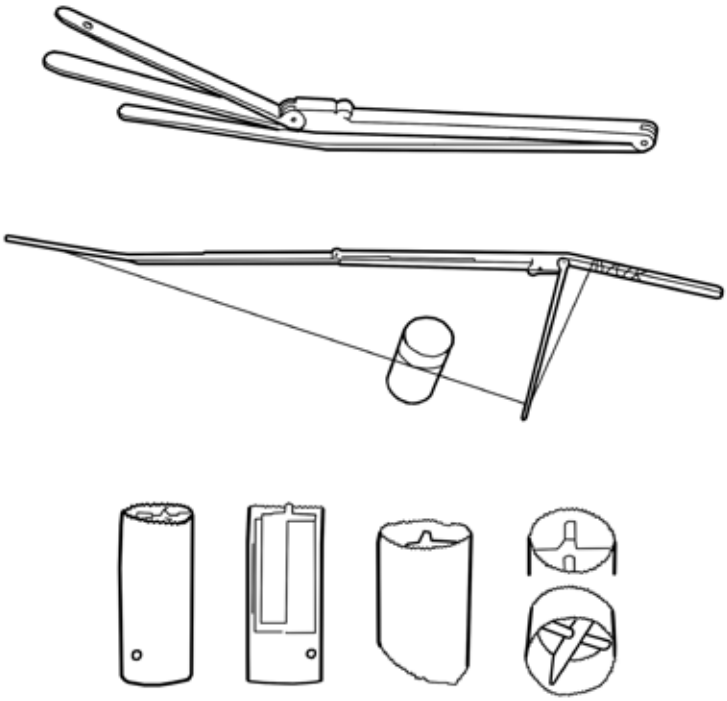
Trepan je specijalizirani instrument koji se upotrebljavao pri operaciji glave – trepanaciji. Riječ je o šupljem cilindričnom instrumentu koji je na funkcionalnoj strani nazubljen i sadrži pomičnu iglu za centriranje.[587] Druga strana instrumenta ima brazdu oko koje se namotavao konac. Instrument se pokretao pomoću rasklopivog luka, čijim bi se pomicanjem trepan okretao i na taj način bušio kost.[588] Trepan se mogao izrađivati od bronce ili željeza.[589]

SPEKULUM

Postoje dvije grupe antičkih spekuluma, vaginalni (lat. *dioptra*) i analni (lat. *speculum ani*). Instrumenti obje grupe izrađeni su od bronce.[590] Vaginalni je spekulum instrument sastavljen od središnje poluge s navojem koji na donjem dijelu završava s držačem u obliku slova "T", a na gornjem dijelu ima dva pomična kraka čiji su završeci savijeni pod pravim kutom. Treći krak je fiksan. Okretanjem držača krakovi su se otvarali ili zatvarali prema potrebi.[591] Analni je spekulum instrument sličan kliještima, a dva su mu kraka spojena vijkom. Funkcionalni je dio instrumenta savijen pod pravim kutom i izdužen, a na krajevima zaobljen.[592] Oba su se instrumenta upotrebljavala za dijagnostiku, izvođenje zahvata i primjenu lijekova.[593]

PINCETA (LAT. *VOLSELLA*)

Pincete su imale široku uporabu u medicini i kozmetici te su čest nalaz na arheološkim lokalitetima. Najčešće je riječ o jednostavnim oblicima, načinjenima iz jednog komada savijenog metala s ravnim ili zavinutim krakovima.[594] Kraci su mogli biti oblikovani tako da završavaju šiljatim ili plosnatim krajem za hvatanje. Plosnati krajevi krakova mogli su imati nazubljenu ili glatku površinu.[595] Čest nalaz u liječničkim grobovima su i dvostruke pincete, kao i pincete koje na gornjem dijelu imaju neki drugi instrument, primjerice ušnu sondu ili spatulu.[596] Neovisno o obliku, pincete su mogle biti izrađene od bronce ili željeza.[597] Upotrebljavale su se za najrazličitije zahvate, poput uklanjanja komadića kostiju, liječenje trahoma, uklanjanje bradavica i drugih izraslina itd.[598] U Zbirci rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu nalazi se 26 pinceta od kojih smo prezentirali nekoliko različitih oblika (sl. 97). Zanimljivo je izdvojiti primjer željezne pincete izrađene od više dijelova kojoj su kraci spojeni zakovicom za svinutu pomičnu osnovu (inv. br. A–4004–1, sl. 97/4).



Sl. 96. Dijelovi trepana. Crtež prema nalazu trepana iz Bingena (Njemačka).
~ Fig. 96 Parts of trepan. Illustration based on example found in Bingen (Germany).

TREPAN (*MODIOLUS*)

Trepan is a specialised instrument used for trepanation. It is a hollow cylinder toothed on one end, with a removable fixation needle.[587] The other end of the instrument has a notch around which a bow string would be attached. Using the bow, the cylinder would be rotated to drill the bone.[588] Trepan was made of bronze or iron.[589]

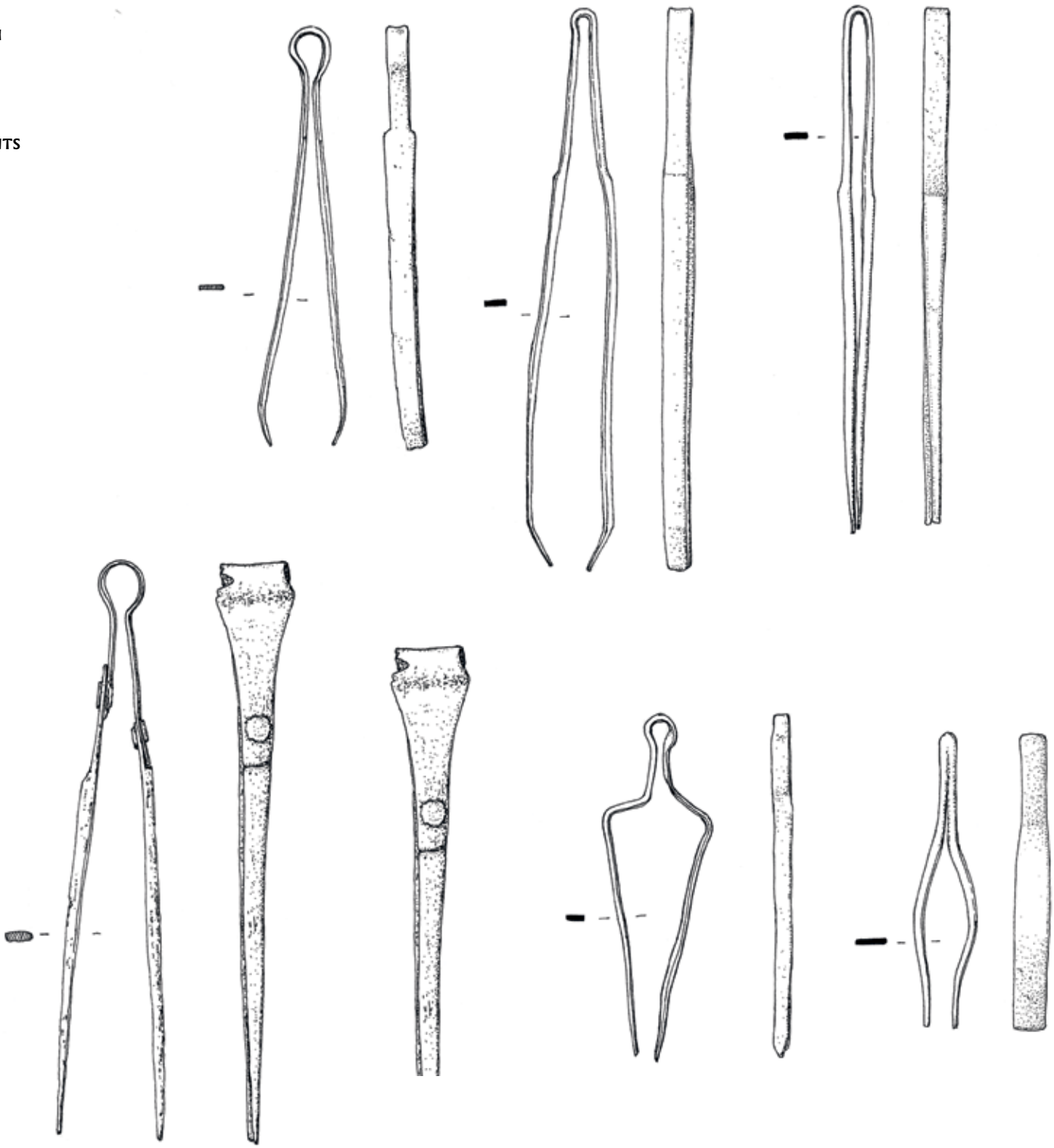
SPECULUM

Two types of specula were known – vaginal speculum (*dioptra*) and rectal speculum (*speculum ani*). Both types were made of bronze.[590] The vaginal speculum is an instrument with a central lever with a screw ending and a T-shaped handle on the lower end. The upper end has two moveable prongs bent at a 90° angle. The third prong is fixated. A physician would open or close the prongs by turning the handle.[591] The rectal speculum was similar to dental forceps in design – two arms connected in the middle. The functional part of the instrument was bent at a 90° angle with an elongated, rounded end.[592] Both instruments were diagnostic tools, useful in certain operations and application of medicaments.[593]

TWEEZERS (*VOLSELLA*)

Tweezers had many functions in medicine and cosmetics, and are a common find at archaeological sites. They are usually simple instruments made of a single strip of metal bent in the middle with straight or turned-in edges.[594] The edges could be pointed or straight. Straight edges could be toothed or smooth.[595] A common find in physicians' burials are double tweezers, as well as tweezers combined with some other instruments, like an ear probe or a spatula.[596] Regardless of their shape, tweezers were

587 Como (1925: 160–162); Künzl (2002: 37, 52); Ó Donnabháin (2003: 91)
588 Kirkup (2003: 291, 299)
589 Künzl (1983)
590 Jackson (1986: 124–125); Künzl (2002a: 31); Künzl (2002b: 53)
591 Longfield-Jones (1988: 81–89); Palaiokrassa (2014: 307)
592 Jackson (2014: 306)
593 Jackson (2014: 306); Palaiokrassa (2014: 307)
594 Deringer (1954: 151); Gregl (1982: 182); Baker (2009: 2–3)
595 Baker (2009: 3)
596 Milne (1907: 93)
597 Gregl (1982: 182)
598 Jackson (1994: 174–175); Baker (2009: 3)



Sl. 97. Pincete izrađene od jednog komada svinute brončane trake, osim željezne pincete kojoj su kraci spojeni zakovicama za svinutu osnovu (4). (M 1:1, Sisak, 1. – 4. st., K176 – 181)
~ Fig. 97 Tweezers made out of one piece of bent bronze band, except for the iron tweezers with arms connected to a bent base using rivets (4). (M 1:1, Sisak, 1st – 4th c., K176 – 181)

made of bronze or iron.[597] They had numerous uses, such as the removal of bone splinters, curing trachoma, removing warts and other growths, etc.[598] The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains 26 tweezers. We have selected several different types based on their form (97). An interesting example are steel tweezers made of several pieces – rivets connect its arms to the base (Inv. no. A–4004–1, 97/4.).

SPOON (*LIGULA*)

Spoons were made of bone, bronze, iron, silver and tin.[599] They usually had a round or oval-shaped recipient that could be covered in a thin layer of tin.[600] They were used in medicine for applying powders or ointments, while in pharmacy they were used in almost all phases of medicament production.[601] The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains 54 spoons made of different metals and combinations of materials. Most spoons in the collection have round recipients. Amongst them, most have an iron handle and a recipient made of tin, while some are made entirely of bronze with recipients covered in a thin layer of tin. Only two spoons have a leaf-shaped recipient. We have selected the most typical forms and combinations of materials (98). Apart from metal spoons, there are 13 spoons made of bone.

OTHER TOOLS USED IN MEDICAL PRACTICE

Apart from medical instruments, ancient physicians often used everyday items. Written sources mention ordinary knives, razors, and shears used for operations, while an ordinary small ceramic vessel could have been used instead of specialized cupping vessels.[602] Physicians, when performing bone surgery, often used carpentry tools like chisels and saws.[603]

INSTRUMENT BOX

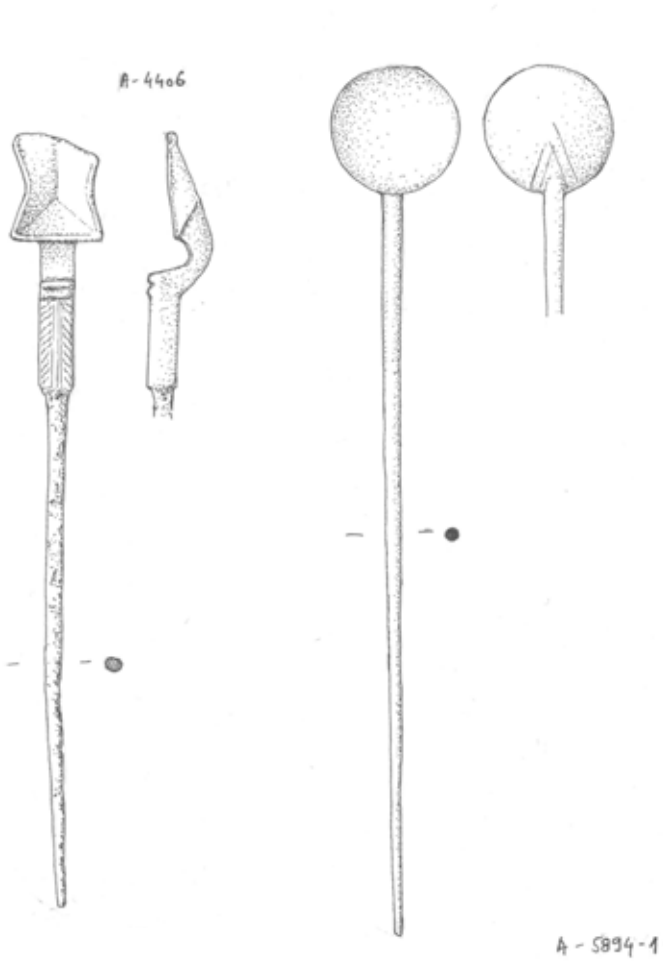
The Hippocratic Corpus mentions various chests for storing and carrying medical instruments.[604] Archaeological finds from the Roman period confirm the use of medicine boxes for instruments and medicaments, which could have been made of various materials, such as metal, wood, bone or leather.[605] Their shapes and sizes vary, from rectangular boxes with compartments to cylindrical instrument cases with covers.[606] Cylindrical instrument boxes were used for carrying instruments like probes, spatulas or scalpels. They could be undecorated or decorated with a simple ornament, like incised lines or concentric circles.[607] The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains seven cylindrical instrument boxes. One of them has a workshop stamp "OFSO" (Inv. no. A–8132, 100a).

OINTMENT PALLET

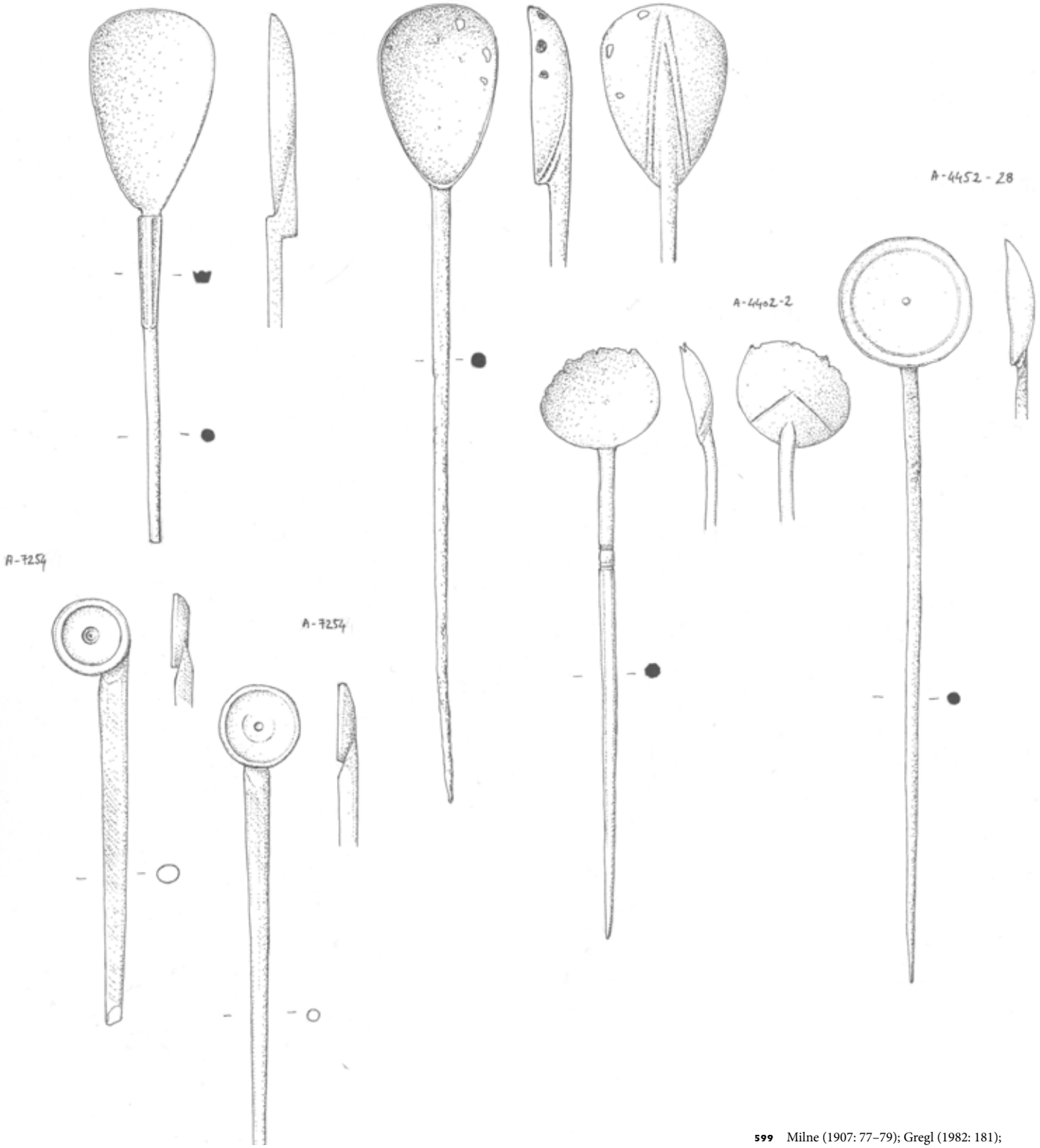
Ointment pallets were used in pharmacy and are common archaeological finds accompanying medical instruments. They were made of stone and were used for grinding and mixing medicaments, as well as covers for boxes for storing pharmaceuticals.[608] The Classical Collections in the Archaeological Museum in Zagreb contain six ointment pallets. Of the three presented here, two are made of diabase rock and one is made of agate (101).

ŽLICA (LAT. *LIGULA*)

Žlice su se izrađivale od kosti te legura bronce, željeza, srebra i kositra.[599] Najčešće su imale recipijent okruglog ili ovalnog oblika koji je mogao biti presvučen tankim slojem kositra.[600] U medicini su se upotrebljavale za nanošenje prašaka ili masti, a u farmaciji su se koristile u gotovo svima fazama pripreme lijekova.[601] U Zbirci rimskih medicinskih i farmaceutskih instrumenata iz Siska Arheološkog muzeja u Zagrebu nalaze se 54 primjerka žlica, izrađenih od različitih metala te kombinacije materijala. Najbrojnije su žlice s okruglim recipijentom. Među njima je najviše onih sa željeznom drškom i kositrenim recipijentom, a po brojnosti ih slijede brončane žlice čiji je recipijent presvučen slojem kositra. Samo dva primjerka imaju listoliki recipijent. Ovdje smo izdvojili najtipičnije oblike i kombinacije materijala (sl. 98). Metalnim primjercima treba nadodati i 13 koštanih žličica.



Sl. 98. Žličice različitih oblika (M 1:1, Sisak, 1. – 4. st., K)
~ Fig. 98 Various spoons (M 1:1, Sisak, 1st – 4th c., K)



599 Milne (1907: 77–79); Gregl (1982: 181); Giunio (2012: 38–39)

600 Deringer (1954: 152); Gregl (1982: 181); Künzl (2002a: 43)

601 Gregl (1982: 181)

KUTIJE ZA INSTRUMENTE

U Hipokratovom je korpusu zabilježeno pohranjivanje i nošenje medicinskih instrumenata u za to predviđenim kutijama.[602] Arheološki nalazi iz rimskog vremena potvrđuju postojanje kutija za instrumente i lijekove od različitih materijala, poput metala, drveta, kosti ili kože.[603] Njihovi oblici i veličine variraju, od pravokutnih kutija s pregradama i posebnim odjeljcima za čuvanje lijekova i držanje instrumenata, do cilindričnih tuljaca s poklopcem.[604] Cilindrični tuljci upotrebljavali su se za nošenje instrumenata poput sondi, spatula, igala ili skalpela, a mogli su biti neukrašeni ili jednostavno ukrašeni, poput niza urezanih linija ili koncentričnih kružnica.[605] U zbirci rimskih medicinskih i farmaceutskih instrumenata Arheološkog muzeja u Zagrebu čuva se 7 tuljaca ili poklopaca tuljaca za instrumente. Treba izdvojiti poklopac tuljca s pečatom "OFSO" (inv. br. A–8132, sl. 101a).

OSTALI PREDMETI KOJI SU SE MOGLI UPOTREBLJAVATI U MEDICINI

Osim specifičnih medicinskih instrumenata, antički su liječnici često posezali za predmetima svakodnevne uporabe. Iz izvora je poznato da su pri operacijama mogli upotrebljavati obične noževe, britve i škare, a umjesto posuda za puštanje krvi mogla je poslužiti i manja keramička posuda odgovarajućeg oblika.[606] Liječnici su često pri zahvatima na kostima upotrebljavali drvodjeljski i klesarski pribor poput dlijeta, a u slučaju da je kost bilo potrebno odrezati, poslužiti je mogla i obična pila.[607]

PLOČICE ZA RAZMAZIVANJE

Pločice za razmazivanje upotrebljavale su se u farmaciji i često se pronalaze na arheološkim lokalitetima zajedno s medicinskim instrumentima. Izrađivale su se od različitih vrsta kamena, a koristile su se za pripremu i usitnjavanje lijekova te kao poklopac kutija u kojima su se čuvali lijekovi.[608] U fundusu Antičkog odjela Arheološkog muzeja u Zagrebu nalazi se šest primjeraka pločica za razmazivanje, od ovdje tri prikazane dvije su izrađene od dijabaza, a jedna od ahata (sl. 101).

Sl. 99. Cilindrični koštani tuljac, kojem nedostaje poklopac, služilo je za spremanje medicinskih instrumenata, sondi, igala, spatula i sl. (Sisak, 1. – 4. st., K191)
~ Fig. 99 Cylindrical instrument box made of bone without a lid. It was used for storing medical instruments, probes, needles, spatulas etc. (Sisak, 1st – 4th c., K191)

Sl. 100. Poklopci cilindričnih brončanih tuljaca za čuvanje medicinskih instrumenata. (Sisak, 1. – 4. st., K193 –195)
~ Fig. 100 Cylindrical instrument box lids. (Sisak, 1st – 4th c., K193 –195)

Sl. 100a. Detalj poklopca s pečatom "OFSO". (Sisak, 1. – 4. st., K192)
~ Fig. 100a Detail of a lid with "OFSO" workshop stamp. (Sisak, 1st – 4th c., K192)

Sl. 101. Pločice za razmazivanje korištene su za pripremu i usitnjavanje lijekova, a mogle su služiti i kao poklopac kutija za čuvanje lijekova. (Sisak, 1. – 4. st., K18 – 20)
~ Fig. 101 Ointment pallets used for preparing and crushing medicines, but they could also have been used as lids for medical containers. (Sisak, 1st – 4th c., K18 – 20)

602 Hippocrates. Decorum 9.8.7–8L
603 Milne (1907: 273–274); Sobel (1991: 121–146); Gostenčnik (2004: 384); Triantafyllos (2014: 315)
604 Milne (1907: 168–169); Michaelides (1984: 316, 324–325); Sobel (1991: 121–147); Künzl (2002: 66–67)
605 Palaiokrassa (2014: 317)
606 Jackson (1994: 171)
607 Jackson (1994: 190–195)
608 Gregl (1983: 178); Künzl (2002a: 101)

VAGA

Kao i danas, priprema lijekova u antičko vrijeme bila bi nezamisliva bez upotrebe vage. Autori poput Celsusa zapisuju precizne recepte za lijekove, bilježeći točne količine svakog sastojka za čije je određivanje bila potrebna vaga.[609] U rimsko su se vrijeme upotrebljavale dvije različite vrste vaga. Jednu grupu čine vage s pomičnim utegom, dok su u drugoj vage s jednakim krakovima. Vage s pomičnim utegom (kantar) imaju polugu poligonalnog presjeka s nejednakim krakovima. Na duljem dijelu kraka nalazi se uteg, a na kraćem dijelu vise tri kuke na koje se postavlja predmet za vaganje. Pomicanjem utega, vaga se dovodi u stanje ravnoteže.[610] Uteg je obično bio izrađen u obliku ljudskog poprsja, životinje, voća ili nekog geometrijskog tijela.[611] Zbog jednostavnosti i praktičnosti upotrebe, ove se vage često nazivaju i "brzim vagama".[612] Vage s jednakim krakovima bile su zahtjevnije za uporabu, ali preciznije. Osnova im je poluga jednakih krajeva, okruglog ili poligonalnog presjeka, koja na sredini i završecima ima ušice.[613] Na krajeve bi se objesile pločice za vaganje. Vaga bi se fiksirala kukom na središnjoj ušici. Pomoću utega postizala bi se ravnoteža vage. U fundusu Antičkog odjela Arheološkog muzeja u Zagrebu nalazi se više desetaka primjerka ili dijelova vaga.

Sl. 102. Vage su mogle biti različitih dimenzija, izdvajamo jedan primjer za precizno mjerenje malih količina. (Sisak, 1. – 4. st., K22)
~ Fig. 102 There are scales of different sizes, here is a small steelyard used for accurately measuring small quantities. (Sisak, 1st – 4th c., K22)

Sl. 102a. Detalj završetka kraka vage.
~ Fig. 102a Detail of a steelyard beam end.

Sl. 103. Rimljani su za mjerenje sastojaka ljekovitih supstanci koristili i vage nejednakih krakova. (Stara Pazova, 1. – 4. st., K21)
~ Fig. 103 For measuring pharmacological ingredients, the Romans also used steelyards. (Stara Pazova, 1st – 4th c., K21)
Sl. 103a. Detalj kraka vage s urezanim oznakama za težinu.
~ Fig. 103a A detail of a steelyard beam with incised marks for measuring.

SCALE

Preparation of pharmaceuticals in Ancient Greece and Rome would be impossible without using scales. Ancient authors like Celsus wrote complex and precise recipes for medicaments with exact quantities of ingredients.[609] In the Roman period, two different types of scales were used – steelyards and equal arm balances. Steelyards had a moveable counterpoise weight and unequal beam arms. On the longer end of the beam is a counterpoise weight, while the shorter arm has three hooks attached for holding the load. By moving the counterpoise weight, the steelyard is balanced.[610] The counterpoise weight was usually shaped like a human bust, animal, fruit or a geometric shape.[611] Because of their simplicity and practicality, steelyards are often called "fast scales".[612] Equal arm balances were more complicated to use, but also more precise. They had a beam with equal arms that had loops at the end and one in the middle.[613] Two pans would be attached to both ends and the load would be calculated by using different weights. The loop in the middle was used for holding the balance. The Collection of Roman Medical and Pharmaceutical Instruments from Sisak in the Archaeological Museum in Zagreb contains several dozen complete or partial steelyards and equal arm balances.

609 Celsus. De medicina.
610 Gregl (1983: 178)
611 Damerow et al. (2000: 17–23)
612 Giunio (2010: 66)
613 Adkins, Adkins (2004: 305)

MEDICINSKI ZAHVATI U ANTIČKO VRIJEME
~
SURGERY IN ANCIENT GREECE AND ROME

U prijašnjim poglavljima prikazan je razvoj medicinske i farmaceutske misli od prapovijesti do kultura antičke Grčke i Rima. Kroz pisane izvore moguće je pratiti ideje koje su dominirale antičkom medicinom i glavne teorije koje su pokušavale objasniti ustrojstvo čovjekova organizma i uzroke bolesti.[614] No ono što nam antički izvori svjedoče, je da ne postoji medicina bez prakse i da su sve spoznaje rezultat dugotrajnog prikupljanja i organiziranja znanja koje je temeljeno na stvarnim iskustvima.

Djelo *O kirurgiji*, koje je dio Hipokratovog korpusa, izdvaja nekoliko nužnih elemenata kirurgije: "pacijenta, kirurga, asistente, instrumente, izvor svjetlosti, broj i način stvari, položaj tijela i instrumenata, vrijeme, metodu i mjesto".[615] Takav pristup kirurgiji usmjerio je razvoj operativne prakse prema vrhuncima, koje će doseći u razdoblju Rimskog Carstva u Celsusovim i Galenovim djelima.[616]

U antičkim pisanim izvorima kirurgija je jedna od medicinskih specijalizacija koja zahtijeva posebnu obuku.[617] Celsus dobrog kirurga opisuje kao "mladića; jakih i mirnih ruku koje ne drhte, te koji je jednako u mogućnosti služiti se lijevom kao i desnom rukom; oštra i jasna vida, neustrašiva duha".[618] Kirurg mora biti podjednako "suosjećajan, kako bi htio izliječiti pacijenta, ali neobazriv na uzvike boli, kako ne bi brzao ili rezao manje no što treba".[619]

Materijalna kultura i osteološki nalazi potvrđuju pisane izvore. Nalazi antičkih medicinskih instrumenata i ljudskih osteoloških ostataka zorno prikazuju neke od zahvata koje su liječnici u antici izvodili. Iako je interpretacija osteološkog materijala ograničena, nalazi ispravno zacijeljenih fraktura, operacija na lubanji, liječenih upalnih procesa i zaraznih bolesti, bacaju svjetlo na svijet antičke medicine i izazova s kojima su se morali nositi pacijenti i njihovi liječnici.[620] U nastavku slijedi izbor nekoliko medicinskih zahvata koje su obavljali antički liječnici, a koji su odabrani kako bi ukazali na važnost interdisciplinarnog pristupa povijesti medicine.[621]

Sl. 104. Držači skalpela različitih oblika. Svima nedostaju oštrice. (Sisak. 1. – 4. st., K166 – 171)
~ Fig. 104 Various scalpel handles, their blades are not preserved. (Sisak, 1st – 4th c., K166 – 171)

Previous chapters discussed the development of medical and pharmaceutical knowledge from prehistory to Ancient Greece and Rome. It is possible, through written sources, to follow the development of ideas that would dominate medicine in ancient Greece and Rome, and lead to major theories that tried to explain and understand the human body and causes of disease.[614] What ancient sources tell us is that there is no medicine without praxis, and all knowledge is the result of many centuries of collecting and organizing information based on experience.

Discussion *On surgery* from the *Hippocratic Corpus* lists several important elements of surgery: "the patient; the operator; the assistants; the instruments; the light, where and how; how many things, and how; where on the body, and the instruments; the time; the manner; the place."[615] This approach to surgery influenced the development of operating practices towards the heights achieved during the Roman Empire, especially in works by Celsus and Galen.[616]

Ancient written sources describe surgery as a medical specialization demanding special training.[617] Celsus states that a good surgeon should be "youthful or at any rate nearer youth than age; with a strong and steady hand which never trembles, and ready to use the left hand as well as the right; with vision sharp and clear, and spirit undaunted".[618] A surgeon has to be "filled with pity, so that he wishes to cure his patient, yet is not moved by his cries, to go too fast, or cut less than is necessary; but he does everything just as if the cries of pain cause him no emotion."[619]

614 Magner (2004: 89–133)
615 Hippokrates. De officina medici. II
616 Gabriel (2011: 174–179)
617 Nutton (2004: 185)
618 Celsus. De medicina VII. Prooemium.4
619 Ibid.
620 Mays (1998); Ortner (2003); Roberts, Manchester (2010)
621 Potpuniji pregled zahvata koji su se izvodili u antičko vrijeme može se pronaći u djelima poput *De officina medici, De fracturis, De articulis* i *De medicina*.
~ For a more complete list of procedures in antiquity see *De officina medici, De fracturis, De articulis* and *De medicina*.

Neki od navedenih zahvata potvrđeni su osteološkim materijalom koji potvrđuje njihovo izvođenje i uspješnost. Dio zahvata nije moguće potvrditi jer su se izvodili na mekom tkivu, no njihovo često i detaljno opisivanje u izvorima, kao i nalazi antičkih medicinskih instrumenata, potvrđuju njihovo izvođenje.

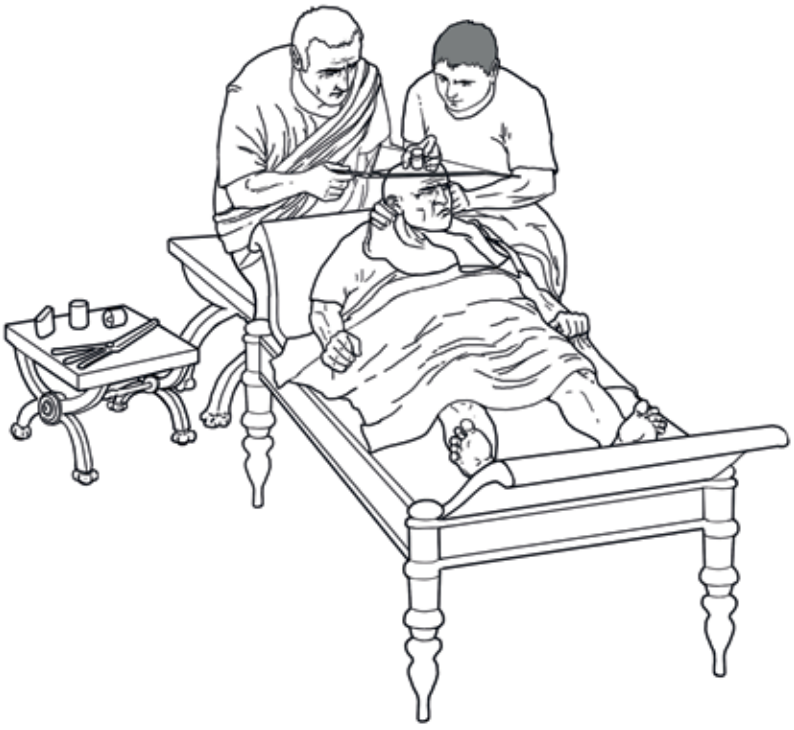
TREPANACIJA

Trepanacija je medicinski zahvat prilikom kojeg se bušenjem ili struganjem stvara otvor na lubanji, a izvodio se u mnogim dijelovima svijeta od prapovijesti do danas.[622] U tekstovima *O ozljedama glave* i *O mjestima u čovjeku* Hipokrat opisuje frakture lubanje koje zahtijevaju kirurški zahvat, s čime se slaže i Galen kada kaže da je trepanacija rješenje za neke ozlijede glave kako bi se smanjio pritisak.[623] Osim ozljeda glave, razlozi za izvođenje trepanacije u antičkom svijetu mogli su biti i epilepsija, glavobolja ili paraliza.[624]

Postojalo je nekoliko tehnika trepanacije. Jedna metoda temeljila se na struganju kosti lubanje skalpelom ili nožem, dok je druga metoda uključivala upotrebu cilindričnog trepana.[625] Poznata je i treća metoda, koja kombinirala bušenje i rezanje. Na lubanji bi se pomoću svrdla ili lancete probušio niz malih otvora oko dijela kosti koji se treba odstraniti, a zatim bi se otvori spojili rezanjem pomoću skalpela ili dlijeta.[626] Celsus opisuje dvije metode trepanacije, onu koja upotrebljava cilindrični trepan i onu koja upotrebljava kombinaciju bušenja i rezanja. Ako je područje koje se treba izrezati malo, onda preporučuje upotrebu cilindričnog instrumenta, koji vrlo precizno i sigurno može izrezati manje površine kosti lubanje. Ako je zahvaćeno područje veće, Celsus predlaže drugu metodu koja spaja bušenje i rezanje. Nakon što bi se otvorila lubanja, bilo je potrebno zaštiti to područje vunom natopljenom u ulje i ocat. [627]

Celsus navodi i zanimljivo rješenje za otkrivanje oku nevidljivih fraktura lubanje koje zahtijevaju trepanaciju. On predlaže da se kost lubanje izloži i da se na nju nanese tinta koja ulazi u male pukotine te nakon uklanjanja jasno naznačuje razliku između kranijalnog šava i frakture.[628]

O izvođenju i uspješnosti operacija svjedoče i osteološki ostaci s tragovima trepanacije pronađeni na antičkim lokalitetima. Jedan takav nalaz potječe iz Ludbrega, a datira se u vrijeme prijelaza kasne antike u rani srednji vijek. Riječ je o grobu muškarca koji je u vrijeme smrti imao između 51 i 55 godina.[629] Na njegovoj su lubanji vidljivi tragovi trepanacije izvedene struganjem, a tragovi zacjeljivanja upućuju na to da je pojedinac nakon operacije živio više godina.[630]



Sl. 105. Trepanacija je postupak otvaranja lubanje, poznat još od neolitika, a u antici je vršen na najmanje tri načina.
~ Fig. 105 Trepanation is a procedure for opening the skull dating back to the Neolithic. In classical antiquity, three trepanation methods were used.

Material culture and osteological remains confirm written sources. Greco-Roman medical instruments and human osteological remains illustrate some operations performed by ancient physicians. Although the interpretation of skeletal material remains limited, findings of properly healed fractures, trepanations, healed infections and contagious diseases shed light on medicine in ancient Greece and Rome, and challenges that patients and their healers faced.[620] This chapter discusses medical procedures practiced in antiquity that stress the importance of an interdisciplinary approach to the history of medicine.[621]

Some operations are confirmed by osteological remains, while others cannot be verified by skeletal remains since they were performed on soft tissue, but frequent mentions and detailed descriptions from written sources, as well as specialised medical instruments, confirm their execution.

TREPANATION

Trepanation is a medical procedure during which an opening is created in the cranial vault, either by drilling or by scraping. The operation has been performed across the world from prehistory until the present.[622] In *On injuries of the head* and *On the places in man*, Hippocratic authors list skull fractures that are to be treated by trepanation. Galen agrees with this and states that trepanation is used in certain head injuries as a way to reduce pressure.[623] In addition to head injuries, reasons for trepanation in antiquity were epilepsy, headaches or paralysis.[624]

There were several trepanation techniques. One method was scraping the cranial vault using a scalpel or a knife, while the second method included using a cylindrical trepan.[625] A third method combined drilling and cutting. A series of holes would be drilled in the skull, around the area that had

622 Furnas et al. (1985: 538–539)
623 Rocca (2003: 256–257)
624 Tullo (2010: 169)
625 Majno (1975: 166–169)
626 Brothwell (1994: 133–134); Mariani-Constantini et al. (2000: 306)
627 Celsus. De medicina. VIII.3.1; VIII.3.4.; VIII.3.10; VIII.4.6
628 Celsus. De medicina.
629 Novak et al. (2013: 201–202)
630 Ibid.

PRIJELOMI KOSTIJU I AMPUTACIJE

Najraniji nalazi uspješno zacijeljenih fraktura datiraju u paleolitik, na što upućuje pronađeni osteološki materijal. U Hipokratovom je korpusu dosta mjesta posvećeno ozljedama kostura i zglobova. Djela *De fracturis* i *De articulis* donose pregled različitih ozljeda kostura i načina njihova liječenja. Kasniji se autori često pozivaju na Hipokratove metode namještanja slomljenih kostiju i imobilizacije udova, no daju i svoje doprinose, pogotovo u razvoju tehnika amputacije.[631]

Slomljene su se kosti namještale ekstenzijom kako bi se postigao anatomski ispravan položaj kosti.[632] U nekim je slučajevima bilo potrebno otkloniti male dijelove slomljene kosti kako ne bi došlo do većeg oštećenja tkiva, a trebalo je obratiti pozornost i na odumiranje kostiju kako bi se pravovremeno dio kosti mogao odstraniti.[633]

U Hipokratovom se korpusu, kada se govori o amputaciji dijela tijela koje je zahvatila gangrena, savjetuje da se ukloni samo dio zahvaćen odumiranjem, no to bi najčešće rezultiralo ponovnom pojavom gangrene.[634] S druge strane, Celsus izričito upozorava kako je potrebno prilikom takve amputacije ukloniti i dio zdravog tkiva. Osim toga, on objašnjava kako treba oblikovati i previti ranu, kako bi se potaknulo zacjeljivanje i smanjila mogućnost ponovne pojave gangrene.[635]

Sl. 106. Amputacija je bila raširen postupak za vrijeme Rimskog Carstva jer su rimskim kirurzima bile poznate tehnike podvezivanja krvnih žila.
~ Fig. 106 Amputation was a widespread procedure during the Roman Empire because Roman surgeons were familiar with arterial sutures and ligatures.

to be removed. Holes would then be connected by cutting with a scalpel or chisel.[626] In the eight book of *De medicina*, Celsus describes two trepanation methods, one using a cylindrical trepan and one combining drilling and cutting. If the affected area is small in size, he suggests using a cylindrical trepan which can cut precise pieces of bone. However, if the area is larger, Celsus recommends using the drilling and cutting method. After the operation, the area had to be covered in wool soaked in oil and vinegar.[627]

Celsus also gives an interesting method for detecting invisible skull fractures requiring trepanation. He suggests exposing the cranial vault and applying ink that fills invisible fractures which become visible after the removal of excess ink.[628]

Osteological remains found on Greek and Roman sites confirm the use of trepanation. One was found in Ludbreg and can be dated between late antiquity and early Middle Ages. Remains are of a man who was between 51 and 55 years old at the time of his death.[629] His skull has visible traces of healed trepanation, suggesting that he lived for several years after the operation.[630]

BONE SURGERY

The earliest successfully healed fractures date back to the Palaeolithic. The Hippocratic Corpus dedicates a lot of text to bone and joint injuries. Books *De fracturis* and *De articulis* give an overview of various bone injuries and their treatment. Later medical authors often refer to the Hippocratic method of setting broken bones and immobilization of limbs, but they also give their contributions, especially in developing amputation techniques.[631]

Fractured bones were set by extension to achieve the correct anatomical position of the bone.[632] In some cases, small bone splinters had to be removed to prevent any further damage to soft tissue, and a physician had to pay close attention for any evidence gangrene.[633]

When considering amputation of a gangrenous body part, Hippocratic authors recommend the removal of only the infected part, which would usually result in a new case of gangrene.[634] On the other hand, Celsus explicitly warns that it is necessary, during such amputation, to remove a part of healthy tissue. In addition, he explains how to shape and bandage a wound to encourage healing and reduce the possibility of gangrene.[635]

Amputation procedures developed rapidly in the Roman period because Roman physicians learned how to stop heavy bleeding by using arterial suturing or ligature.[636] This enabled the development of the arterial clamp, a medical instrument known in the Roman period.[637] In addition to their skill in managing bleeding, Roman physicians were skilled in wound suturing by using needles and linen thread.[638]

As a way of preventing infections, physicians had very effective means of cleaning wounds – vinegar and strong red wine.[639]

Various medical instruments, as well as carpentry tools, were used in bone surgery.[640] Instruments included scalpels, various probes, forceps, spatulas, needles, saws, chisels, etc.[641]
Example of a poorly healed tibia with sign of osteomyelitis comes from a grave of adult male from Vinkovci who was 31-35 years of age at the time of his death. The grave dates to late antiquity. Osteomyelitis is a result of a fracture. Left talus is fused with the tibia.

WAR INJURIES

In ancient times, empirical advances in medicine were probably triggered by war injuries.[642] Homer's *The Iliad* records first examples of caring for the wounded, who were usually assisted by their fellow soldiers. Homer also describes physicians soothing the wounded, in addition to them extracting arrows and spearheads.[643]

Medical care for wounded soldiers became a specialization that achieved great success, not

631 Primjerice Celsus u svom djelu *De medicina*. ~ For example,Celsus in *De medicina*.
632 Hippokrates. De fracturis. I
633 Celsus. De medicina. VIII.2
634 Papavramidou, Christopoulou-Aletra (2009: 548–551)
635 Celsus. De medicina. VII.33.1; VII.33.2

Operacije amputacije ubrzano se razvijaju u rimskom periodu jer su liječnicima u Rimu, za razliku od liječnika koji su djelovali prije njih, bile su poznate tehnike zaustavljanja krvarenja podvezivanjem i šivanjem krvnih žila.[636] To je potaknulo i razvoj arterijske stezaljke, medicinskog instrumenta koji je bilo poznat u rimsko vrijeme.[637] Osim zaustavljanja krvarenja, rimski su liječnici bili vješti i u zatvaranju rana, što su činili pomoću igle i lanenog konca.[638]

Kako bi zaustavili pojavu i širenje infekcije, liječnici su na raspolaganju imali vrlo učinkovita sredstva za ispiranje rana – ocat i jako crno vino.[639]

Za navedene se zahvate mogao upotrebljavati niz medicinskih instrumenata, ali i drvodjeljskog i klesarskog alata.[640] Instrumentarij je uključivao skalpele, različite sonde, kliješta, spatule, igle, pile, dlijeta i sl.[641]

Primjer komplikacije nastale usred prijeloma goljenične kosti poznat nam je iz kasnoantičkog groba muškarca, u trenutku smrti starog između 31 i 35 godina, iz današnjih Vinkovaca. Na čitavoj dijafizi lijeve goljenične kosti prisutan je jaki osteomijelitis. Najvjerojatniji uzrok osteomijelitisa lijeve goljenične kosti je ozljeda gležnja jer je lijeva skočna kost srasla s goljeničnom kosti.

RATNE OZLIJEDE

Ratne su ozlijede vjerojatno potaknule empirijski razvoj medicine u antičko doba.[642] U Homerovoj *Ilijadi* zabilježeni su prvi slučajevi brige za ranjene, koje su obično suborci izvlačili iz bitke i dovodili do liječničkih šatora. Homer opisuje i liječnike koji smiruju ranjenike, a opisuje i kako su izvlačili strijele i koplja proširivanjem rana.[643]

Tek se razvojem i širenjem rimske vojne administracije, praktično liječenje vojnih ozljeda izdvojilo kao zasebna medicinska specijalizacija, postigavši zavidne rezultate kakvi dotad nisu bili poznati u antičkom svijetu.[644] Razvoj Carstva zahtijevao je bolju organizaciju medicinske skrbi za vojnike, a Augustove reforme to su omogućile.[645] Vjerojatno je najbolji primjer podizanje vojnih bolnica u sklopu vojnih logora ili utvrda, u kojima su vojnici mogli dobiti liječničku skrb.

Kao i drugi liječnici u antičko vrijeme koji su se susretali s ranjenim vojnicima, i rimski su liječnici morali moći zaustaviti krvarenje, izvaditi projektile iz tijela, očistiti rane, zašiti ili podvezati krvne žile te pravilno previti ranu i spriječiti pojavu infekcije.[646]

Ranije je spomenuto kako je Celsus značajno unaprijedio pristup amputaciji, što je vjerojatno rezultiralo i povećanjem uspješnosti ostalih operacija.[647]

Vojni su se liječnici najčešće susretali s različitim posjekotinama, prijelomima, nagnječenjima i ranama s projektilima koje je trebalo izvaditi. Za to su upotrebljavali širok spektar sofisticiranih medicinskih instrumenta: sonde, spatule, listolike sonde, skalpele, kliješta, igle, kuke, kao i poznatu "Dioklesovu žlicu".[648]

Sl. 107. Saniranje ratnih ozljeda, crtež prema predlošku scene s Trajanova stupa. (2. st.)
~ Fig. 107 Treatment of war wounds, an illustration based on a scene from the Trajan's Column. (2nd c.)

seen ever before in the ancient world, only through the development and expansion of Roman military administration.[644] The development of the Empire demanded better medical care for the army, which was enabled by Augustus' reforms.[645] Probably the best example is the emergence of military hospitals, where wounded soldiers could receive medical care.

Like other ancient physicians who cared for wounded soldiers, Roman physicians had to be able to stop bleeding, remove missiles from the body, clean wounds, suture blood vessels, bandage wounds, and prevent infections.[646]

It was previously mentioned that Celsus made considerable advances in amputation surgery which probably resulted in the increased success of other similar operations.[647]
Military doctors usually faced a variety of slashing and piercing wounds, fractures, and blunt traumas. When treating said injuries, they used a wide range of sophisticated medical instruments, such as probes, spatulas, spoon probes, scalpels, forceps, tweezers, needles and hooks, as well as the famous "spoon of Diocles".[648]

Practical medical knowledge that Roman physicians possessed must increased survival rates.[649] Combining medical knowledge with Roman administration, as well as medical books written in Latin, had a major impact on the success of Roman medicine.[650]

The man buried in the tomb 34 from Velim suffered a depressed skull fracture during his lifetime. Given the fact that the fracture healed well, it can be assumed that a person had medical care and that he survived the injury.

636 Magner (2004: 120)
637 Kirkup (2007: 57)
638 Gabriel (2011: 175)
639 Nutton (2004: 93)
640 Jackson (1994: 195)
641 Jackson (1994: 190–195); Jackson (2009: 73–92)
642 Magner (2004: 108, 114, 117)
643 Ibid.
644 Gabriel (2011: 179)
645 Künzl (2002: 27)
646 Broughton et al. (2006: 85)
647 Gabriel (2011: 175–176)
648 Jackson (1994)

Praktično medicinsko znanje koje su posjedovali rimski liječnici moralo je utjecati na smanjenje broja smrtno stradalih vojnika.[649] Dodatna sprega medicinskog znanja i rimske administracije, kao i produkcija praktičnih djela o medicini i kirurgiji pisanih na latinskom jeziku, imala je veliki utjecaj na uspjeh rimske medicine.[650]

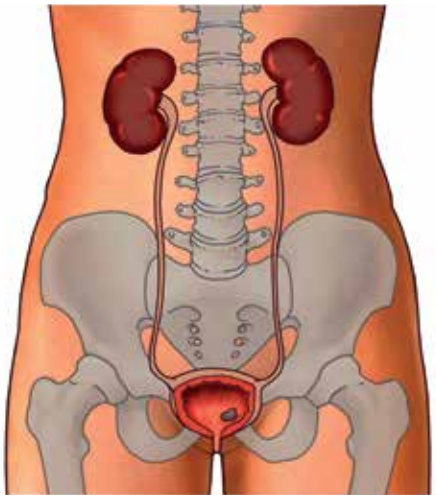
Muškarac pokopan u grobu 34 iz Velima za života je zadobio depresijsku frakturu lubanje. S obzirom na to da je fraktura dobro zacijelila, može se pretpostaviti da je osoba imala medicinsku skrb te da je preživjela ranjavanje.

LITOTOMIJA

Litotomija se u antičko vrijeme isključivo odnosila na ekstrakciju kamenca iz mokraćnog mjehura. Do nastanka kamenca dolazi uslijed stanja koja rezultiraju stvaranjem urina visoke koncentracije, poput dehidracije. To potiče kristalizaciju kalcijevih i magnezijevih soli i stvaranje kamenca, koji može biti sitan poput pijeska ili većih dimenzija. Simptomi uključuju bol u trbuhu, bol u leđima, teško i često mokrenje, visoku temperaturu i krv u urinu. Plinije navodi kako je ovo jedna od najbolnijih bolesti, dok Hipokrat i Celsus upozoravaju kako ova bolest najčešće pogađa dječake.[651] Razlog za to neki vide u činjenici da su djeca često bila dohranjivana kašom, što uzrokuje deficijencije hranjivih tvari, a ta kemijska neravnoteža potiče kristalizaciju i stvaranje mokraćnih kamenaca.[652]

Hipokrat je inzistirao da se kamenac iz mokraćnog mjehura ne vadi, isto kao i Celsus, koji upozorava na opasnosti kod izvođenja ovog zahvata, osim u slučaju kada su bolovi toliko snažni da se na njih ne može utjecati lijekovima i kada je život pacijenta ugrožen. Celsus dodatno napominje da su ozlijede mjehura, koje mogu biti rezultat loše izvedenog zahvata, najčešće smrtonosne.[653]

Prvi potpuni antički opis litotomije donosi Celsus u *De medicina*. U svom opisu, on navodi jasna ograničenja i upozorenja prije pristupanja zahvatu. Tako preporučuje da se zahvat izvodi u proljeće i samo na dječacima do 14 godina starosti. Nekoliko dana prije same operacije pacijent mora jesti umjereno i mora piti mnogo vode. Osim toga, pacijentu se predlaže da hoda kako bi se kamenac spustio prema vratu mjehura. Ako su bili ispunjeni svi preduvjeti, liječnik je mogao pristupiti izvođenju zahvata, za koji mu je bila potrebna asistencija jednog ili dvojice "snažnih i obučenih muškaraca".[654] Njihova je zadaća bila da pacijenta drže u ispravnom položaju kako bi liječnik mogao pristupiti međici. Za operaciju su liječniku trebala dva instrumenta, skalpel i tupa kuka.[655] Prije kirurškog zahvata, liječnik bi pokušao potaknuti veći kamen u ispravan položaj radi lakšeg vađenja, a to je činio umetanjem jednog ili dva prsta lijeve ruke u rektum i laganim pritiskanjem donjeg dijela trbuha desnom rukom. Kada bi se mokraćni kamen našao na ispravnom mjestu, poprečno bi zarezao međicu i otvorio prolaz do vrata mjehura.[656] Kamen bi se zatim izvadio



Sl. 108. Prikaz smještaja mokraćnog mjehura, iz kojeg se operacijom, u antičko vrijeme, odstranjivao kamenac, pokazuje svu opasnost koju je zahvat nosio.
~ Fig. 108 Position of the bladder in the human body, from which, in antiquity, a bladder stone could be removed, regardless of the dangers of lithotomy.

LITHOTOMY

In antiquity, lithotomy was a surgical removal of stones from the bladder. Bladder stones form when certain conditions, such as dehydration, cause urine to become very concentrated. This leads to the formation of calcium or magnesium salt crystals, which can vary in size and consistency. Symptoms caused by bladder stones include abdominal and back pain, difficult and frequent urination, fever, and blood in urine. Pliny describes this as one of the most painful diseases, while Hippocrates and Celsus state that this condition is common in young boys.[651] Some authors connect the high frequency of bladder stones in children with their nutrition in antiquity, which lead to nutritive deficiencies. This chemical imbalance caused the crystallization and formation of bladder stones.[652]

Hippocrates is against extracting bladder stones. Celsus shares his opinion, but suggests lithotomy when pain is no longer manageable by medicaments and when the patient's life is at stake. He also warns that any damage to the bladder, result of a poorly executed procedure, is usually fatal.[653]

The first complete description of lithotomy can be found in Celsus' *De medicina*. In his description, he states the limitations and dangers of the procedure. He suggests performing the surgery in spring and only on male children less than 14 years of age. Several days before the surgery, the patient should eat moderately and must drink plenty of water. In addition, the patient is advised to walk frequently to encourage the stone's descent into the neck of the bladder.[654] If all the prerequisites are met, the surgeon can proceed with the operation which required assistance from one or two "strong and trained adult men". Their task was to hold the patient in the correct position to allow the surgeon access to the perineum. The surgeon used two instruments for the operation, a scalpel and a blunt hook.[655] Before the surgery, the physician would manually try to bring the stone in the correct position by inserting one or two fingers of his left hand into the rectum while gently applying pressure to the lower part of the belly with the other hand. When the stone was in the correct position, he would make a transverse cut at the perineum to allow access to the neck of the bladder.[656] The stone would then be extracted by fingers, or using a blunt hook or a spoon probe.[657] After the surgery,

649 Gabriel (2011: 179)
650 Künzl (2002: 31–40); Magner (2004: 114–121)
651 Jackson (1988: 125); Makler (1980: 317–319)
652 Makler (1980: 317–319)
653 Amonije iz Aleksandrije (grč. Ἀμμώνιος, 3. stoljeće pr.Kr.), kako navodi Celsus, izumio je instrument za razbijanje mokraćnih kamenaca.
~ Ammonius of Alexandria (Ἀμμώνιος, 3rd century BCE), claims Celsus was the inventor of an instrument used for breaking bladder stones.
Celsus. De medicina. VII.26.2F; VII.26.2M; VII.26.3B
654 S obzirom na to da Celsus izričito navodi spol i starost pacijenta, može se oprezno pretpostaviti kako je kamenac u mokraćnom mjehuru bio čest kod dječaka u dobi od 9 do 14 godina.
~ Since Celsus explicitly states the age and sex of lithotomy patients, it can be assumed that bladder stones were common in boys between ages of 9 and 14.
Celsus. De medicina. VII.26.2; VII.26.2B.
655 Antički izvori spominju, a arheološki nalazi potvrđuju, postojanje posebnog instrumenta za vađenje mokraćnih kamenaca – kuke za litotomiju.
~ Ancient sources mention, and archaeological finds confirm, the existence of a lithotomy hook.
Künzl (1983), Jackson (1994)
656 Celsus. De medicina. VII.26.2

prstima, a ako to nije bilo moguće, oslobodilo bi ga se pomoću kuke ili listolike sonde.[657] Nakon vađenja kamena Celsus savjetuje da se ranu očisti jakim octom i pacijenta okupa, a nakon toga ranu treba zamotati u predivo i vunu natopljenu toplim uljem.[658]

Ovaj je zahvat bio vrlo rizičan, ali je donosio i veliko olakšanje. Nespretan je liječnik loše izvedenim zahvatom mogao ugroziti pacijentov život, no najveća su opasnost bile moguće infekcije rane. Zbog svega navedenog, izvođenje ovog zahvata zahtijevalo je posebnu specijalizaciju pa je zahvat vjerojatno bio dostupan samo eliti, onima koji su mogli izdvojiti novčana sredstva kako bi se riješili boli, makar i po cijenu vlastitog života.[660]

OPERACIJA SIVE MRENE

Katarakta ili siva mrena zamućenje je očne leće. Razlikuju se tri vrste sive mrene: prirođena, koja je najčešće genetska, stečena, koja može nastati uslijed ozljede oka ili kao posljedica bolesti, i senilna, koja je rezultat starenja organizma. Siva mrena može uzrokovati smanjenu mogućnost percepcije boja, zamućen vid, osjetljivost na svjetlost i sljepoću.[661] Antički su liječnici smatrali da je siva mrena stvrdnuta tekućina između dvije leće koja je rezultat bolesti ili ozljede oka.[662]

Prvi opis operacije sive mrene u Europi nalazi se u Celsusovom djelu *De medicina*.[663] Kao i kod litotomije, liječnici su se morali specijalizirati za izvođenje ovog zahvata jer je zahtijevao iznimnu preciznost.[664] Celsus je u opisu zahvata vrlo precizan i stavlja poseban naglasak na pripremu pacijenta za operaciju. Priprema za operaciju podrazumijevala je post dan prije operacije, ali i osvijetljenu sobu: "Pacijent mora sjediti nasuprot doktoru u dobro osvijetljenoj prostoriji i treba gledati prema svjetlu, dok liječnik sjedi na povišenoj stolici." Zbog osjetljivosti operacije, liječnik je trebao imati pomoćnika koji je pacijentu držao glavu, kako uslijed pomicanja ne bi došlo do većih ozljeda. Sam zahvat počinje umetanjem igle "ravno kroz dvije vanjske opne na sredini između zjenice oka i sljepoočnice, dalje od središta mrene, pazeći pritom da se ne ozlijede krvne žile". Igla se zatim rotira kako bi se razbila mrena i gurnula prema donjem dijelu oka. Po završetku operacije, na oko se stavlja vuna natopljena bjelanjkom te se zamata, a pacijentu se propisuje odmor i post.[665]

Instrument potreban za ovaj zahvat je igla, no Celsus nije precizan kada ju opisuje već kaže da igla mora biti "dovoljno zašiljena da može [ući u oko], ali ne suviše delikatna".[666] Arheološki nalazi potvrđuju i postojanje posebnih igala za operaciju sive mrene.[667] Riječ je o iglama koje imaju tordirani držač koji završava maslinastim zadebljanjem.[668] No, postojanje specifičnog instrumenta ne isključuje mogućnost uporabe ostalih vrsta igala – mogla je poslužiti svaka igla s odgovarajućim vrhom, kako ga je opisao Celsus.[669]

Celsus suggests cleaning the wound with strong vinegar and giving the patient a bath, and the wound should be bandaged in yarn and wool soaked in warm oil.[658]

This operation carried great risks, but also great relief. Unskilled surgeons could endanger a patient's life by performing poorly executed operations, but, despite that, infection from the wound posed a greatest risk.[659] Therefore, lithotomy was practiced by specialists, making it available only to the elite who could, in an attempt to relieve pain, afford it, even if posed a threat to their lives.[660]

CATARACT SURGERY

A cataract is a clouding of the lens in the eye. There are three types of cataract: congenital, acquired (the result of trauma), or senile (associated with ageing). Cataract symptoms include faded colours, blurry vision, sensitivity to bright light, and blindness.[661] Ancient physicians thought that cataract was a hardened liquid between the "two tunics of the eye" which was the result of disease or eye trauma.[662]

The first description of couching cataract surgery in Europe is from Celsus' *De medicina*.[663] As with lithotomy, physicians had to specialize in performing this procedure because it required exceptional precision.[664] Celsus makes a detailed description of the operation and emphasizes the preparation of the patient before surgery. Preparation for the surgery included fasting the day before, but it also required a well-lit room: "[The patient] is to be seated opposite the surgeon in a light room, facing the light, while the surgeon sits on a slightly higher seat." Because of the sensitivity of the operation, the physician should have an assistant to hold the patient's head to prevent any serious injuries to the eye. The procedure begins by inserting a needle "straight through the two outer tunics at a point intermediate between the pupil of the eye and the angle adjacent to the temple, away from the middle of the cataract, in such a way that no vein is wounded". The needle is then rotated to break the cataract and push it below the pupil. After the surgery, the eye is covered with wool soaked in egg whites and is then bandaged, while the patient is prescribed rest and fasting.[665]

Sl. 109. Crtež rimske stele koji prikazuje operaciju oka prema predlošku iz rimske Galije. (Montiers-sur-Saulx, Francuska, 2. st.)
~ Fig. 109 Illustration based on a Roman stela depicting the cataract removal found in Roman Gaul. (Montiers-sur-Saulx, France, 2nd c.)

657 Jackson (1994: 181)
658 Celsus. De medicina. VII.26.5
659 Jackson (1988)
660 Ibid.
661 National Eye Institute. Facts About Cataract. (18.2.2017.)
662 Celsus. De medicina. VII.7.14
663 Najraniji spomen operacije sive mrene datira se u 3. stoljeće pr. Kr., a nalazi se u djelu indijskog liječnika Sushrute.
~ Earliest description of cataract surgery dates to 3rd century BCE, and was mentioned in a book by an Indian physician Sushruta
Meulenbeld (2002); Nutton (2004: 31)
664 Jackson (1988: 85)
665 Celsus. De medicina. VII.7.14C–F
666 Celsus. De medicina. VII.7.14D
667 Jackson (1994: 177)
668 Feugére et al. (1985: 439–443); Jackson (1986: 126)
669 Jackson (1994: 177)

Operacija sive mrene Celsusovom metodom u većini je slučajeva vjerojatno bila neuspješna. Suvremene analize ove tehnike, koja je prisutna u tradicionalnoj medicini Afrike i Azije, sugeriraju da samo mali broj pacijenata povrati mogućnost zapažanja svjetla i pokreta, dok više od 70% pacijenata potpuno oslijepi.[670] Kao i danas, uspjeh svake operacije u velikoj je mjeri ovisio o strpljivosti i vještini liječnika.

PUŠTANJE KRVI

Puštanje krvi kako bi se zaustavila bolest ili spriječilo njeno pojavljivanje i održalo tijelo zdravim, bio je jedan od najčešćih operativnih zahvata koje su provodili liječnici od antike pa sve do 19. st.[671] Prvi dokaze puštanja krvi pojavljuju se oko 1000. g. pr. Kr. u Egiptu, od kuda se sam postupak i proširio.[672] Praksa puštanja krvi bila je u skladu s prevladavajućim medicinskim sustavom antike, koji je bolest i zdravlje opisivao u terminima harmonije tjelesnih tekućina. Postupak se provodio na više načina. Venesekcija je postupak u kojem se pacijentu zasijecala žila iz koje se puštala krv.[673] Također se za puštanje krvi upotrebljavalo pijavice ili se krv puštala pomoću posuda koje su stvarale vakuum. Metoda koja se koristila ovisila je o količini krvi koja se trebala ispustiti i o djelu tijela koji je zaražen.[674] U Hipokratovom se korpusu spominju slučajevi i oboljenja u kojima se koristio postupak venesekcije.[675] Puštanje krvi se tako savjetuje kod vrućice, nadutosti,

Sl. 110. Krv se tijekom antike najčešće puštala zasijecanjem krvnih žila na različitim dijelovima tijela.
~ Fig. 110 In antiquity, blood was often withdrawn by cutting blood vessels in different parts of the body.

The instrument used in this operation was a needle, but Celsus does not give a clear description of it, saying only that the needle has to be "pointed enough to penetrate, yet not too fine".[666] Archaeology confirms the existence of special cataract needles. They have a twisted handle that ends with an olivary end on one side.[668] However, the presence of specialised instruments does not exclude the use of ordinary needles, as long as they had properties described by Celsus.[669]

The couching method for cataract surgery was, in most cases, probably unsuccessful. Modern analysis of this technique, still present in folk medicine in Africa and Asia, suggest that only a small number of patients regain the ability to perceive light and movement, while more that 70% end up completely blind.[670] As is true today, the success of each operation is largely dependent on the patience and skill of the physician.

BLOODLETTING

Bloodletting in order to stop or cure a disease or illness is believed to have been one of the most common surgical procedures carried out by physicians and surgeons, from antiquity all the way to the 19th century.[671] The first evidence of bloodletting comes from Egypt in 1000 BCE, and it slowly spread from there.[672]

Bloodletting was in accordance with the prevailing medical system which described disease and health in terms of a balance of the four humors. The procedure was carried out in several ways. Venesection was performed by cutting a patient's vein so he could bleed.[673] Sometimes medical leeches were used or bleeding was performed using vacuum. The method used depended on the amount of excess blood and the part of the body that was infected.[674] Several works from the Hippocratic Corpus described the cases and illnesses for which bloodletting was used.[675] Bloodletting was advised in cases of fever, flatulence, loss of speech caused by fever, injuries of the skull, enema accompanied by cough, abdominal pain, urinary tract infections, headache, eye pain and diseases of the spleen, lungs and hips.[676] Treatises from the Hippocratic corpus also discussed the anatomy of veins and which veins should be used for specific illnesses.[677] Several characteristics that physicians should consider when deciding on the proper treatment were listed, for example the patient's age and physical condition, and the severity of the illness.

Erasistratus, Alexandrian anatomist, distinguished between veins and arteries, but he believed that the latter carried only air. He believed that many illnesses were caused when blood and air mixed, or when their flow through the veins was obstructed. Erasistratus shied away from aggressive procedures. Instead, he advocated a milder approach, while his contemporary Herophilus encouraged bloodletting as a part of therapy.

Asclepiades used venesection as part of various treatments, along with dietetics, massages, baths and exercise. He often performed bloodletting from several places on the body of a patient at the same time, and recommended venesection even when treating haemorrhaging.[678]

Galen accepted venesection as a cure and prevention for certain diseases. Unlike his role model, Galen approached venesection in a systematic and scientific manner. He dedicated three of his works to bloodletting.[680] Galen knew that veins and arteries contained blood and not air, as was long believed. Galen also believed that blood was created and used up in the body, but it could accumulate in the extremities and become stagnant. The blood removed from the body could be bad for two reasons. Either there was too much of it in a particular part of the body, or it did not perform its vital function of nourishing the body.[681]

The practice of bloodletting was widespread during the Middle Ages, and was not scientifically reviewed until the beginning of the 19th. Today, the process is almost completely abandoned, except in very rare cases.[682]

670 Schemann et al. (2000)
671 British Science Museum. Bloodletting. (02.12.2016.)
672 Seigworth (1980: 2002)
673 McCormic (2010: 12–14)
674 Papavramidou & Christopoulou-Aletra (2009: 624)
675 Puštanje krvi spominje se u *Epidemijama* (II, IV, V, VI i VII), *O ranama*, *Zrak, mjesta i čovjek*, *O ženskim bolestima*, itd. Bloodletting was mentioned in *Epidemics* (II, IV, V, VI and VII), *On wounds, On Airs, Places and Man, On the Diseases of Women*, etc.

gubitka govora usred vrućice, napuknuća lubanje, edema praćenog kašljem, boli u području abdomena, urinarnih infekcija, glavobolja, boli u očima te bolesti slezene, pluća i kuka.[676] Određuje se i dio tijela iz kojeg treba pustiti krv kod određenih bolesti.[677] Također se nabrajaju razni faktori koje liječnik treba uzeti u obzir, poput dobi, tjelesnog stanja bolesnika i težine bolesti. Treba naglasiti kako su Hipokrat i njegovi sljedbenici ipak davali prednost prehrani i ljekovitim pripravcima pred venesekcijom.

Erasistrat, aleksandrijski anatomist, razlikovao je vene i arterije, ali je vjerovao da potonje tijelom raznose zrak. Smatrao je da mnoge bolesti uzrokuje miješanje krvi i zraka, ili pak opstrukcija njihovog protoka kroz tijelo. Zanimljivo je da je zazirao od agresivnih postupaka, već je zagovarao blaži pristup, dok njegov kolega Herofil nije izbjegavao venesekciju kao dio terapije. Asklepijad iz Bitinije je koristio venesekciju kao dio terapije, zajedno uz dijetetiku, masaže, kupke i vježbanje. Često je prakticirao istovremeno puštanje krvi iz više mjesta na tijelu, a preporučivao je venesekciju čak i u slučajevima krvarenja.[678]Galen je prihvatio venesekciju kao lijek i kao prevenciju od određenih bolesti. Za razliku od Hipokrata, on joj pristupa na sistematičan i znanstven način.[679] Ukupno je temi puštanja krvi posvetio čak tri svoje rasprave.[680] Bilo mu je poznato kako, uz vene, i arterije sadrže krv. Smatrao je da se krv stvara i troši te da se može nakupljati u ekstremitetima gdje stagnira. Krv koja se izdvaja iz tijela može biti loša na dva načina. Ili je u određenom djelu tijela ima previše, ili ne obavlja svoju vitalnu funkciju.[681]

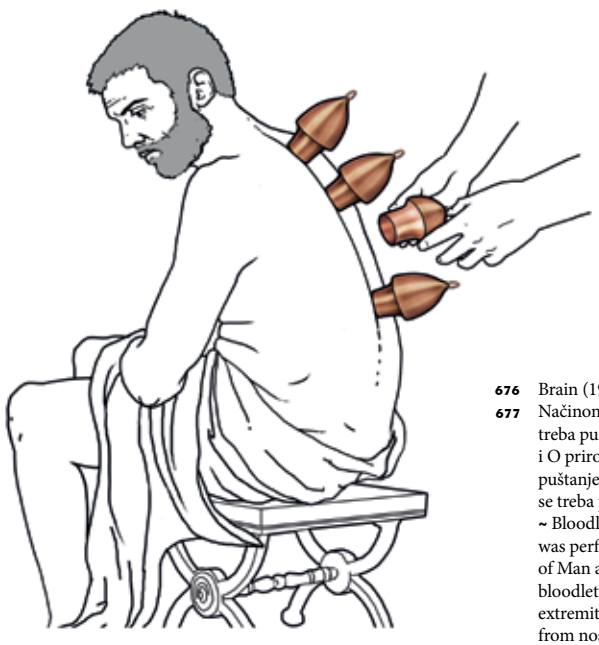
Praksa puštanja krvi bila je vrlo raširena i u srednjem vijeku te je znanstveno preispitana tek početkom 19. st. Danas je kao postupak gotovo potpuno napuštena, osim u vrlo rijetkim slučajevima.[682] Drugi poznati način puštanja krvi uključivao je pijavice. Pijavice (grč. βδηλλα, lat. sanguisuga) su koristili stari Egipćani, možda čak i 1500. g. pr. Kr. ako je suditi po zidnim slikarijama iz grobnica.[683] Grčki i rimski liječnici su za postupak koristili medicinske pijavice (*Hirudo medicinalis*) i njima srodne vrste (*Hirudo verbana, Hirudo troctina* i *Hirudo orientalis*). Pacijentu bi se zarezala koža i na to mjesto bi se postavile pijavice. Nikander s Kolofona opisuje upotrebu medicinskih pijavica te savjetuje da nakon ugriza otrovne životinje treba primijeniti pijavice kako bi s krvlju isisale otrov.[684] Od rimskih autora, spominju ih liječnik Temison i Plinije Stariji. Plinije upozorava da treba biti oprezan kod uklanjanja pijavica kako njihova glava ne bi ostala u rani. Smatra da su vrlo uspješne u liječenju hemeroida, upale vena, gihta i za ubijanje buha kao sastojak fumigatora.[685] Pijavice su se prepisivale kod bolesti jetre, upale živaca genitalnog područja, bolova u trbuhu, paralize oka te čak u slučajevima manije.[686] Galen, pak, opisuje postupak uporabe pijavica koji uključuje pripremu samih životinja, pripremu kože oboljelog, način sigurnog uklanjanja pijavica te način skupljanja krvi nakon njihovog uklanjanja.[687]

Uporaba medicinskih pijavica zadržala se sve do početka druge polovine 20. st. Danas ih se koristi eksperimentalno i sporadično u određenim slučajevima.[688]

The other well-known procedure used in bloodletting included leeches. Leeches were used by ancient Egyptians, maybe as early as 1500 BCE, judging by the frescoes in the tombs. Greek and Roman physicians used medical leeches (*Hirudo medicinalis*) and their related species (*Hirudo verbana, Hirudo troctina* and *Hirudo orientalis).* A small incision was made on the patient's skin and leeches were applied on the wound to drink the excess blood. Nicander of Colophon described the use of medicinal leeches. He advised that after an attack of a poisonous animal, leeches must be applied on the bite to suck out the venom with the blood.[684]

Among Roman authors, Themison and Pliny the Elder wrote about leeches. Pliny warned that one should be careful when removing leeches, so the head was not left behind. He believed leeches to be quite effective in treating haemorrhoids, phlebitis, gout and killing fleas as an ingredient of fumigators.[685] Leeches were used for a whole range of illnesses, liver disease, inflammation of the nerves in the genital area, abdominal pain, eye paralysis and even cases of mania.[686] Galen described a method of using leeches by preparing the animals and the patient's skin, safely removing them and collecting the blood after their removal.[687]

The use of medicinal leeches was popular until the beginning of the second half of the 20th century. Today they are used experimentally and sporadically but only for certain cases.[688]



Sl. 111. Naizgled manje bolan način puštanja krvi izvodio se pomoću posebnih čašica.
~ Fig. 111 Seemingly less painful way of blood-letting was through the use of cupping vessels.

676 Brain (1986:113–116)

677 Načinom puštanja krvi i mjestom iz kojeg se treba pustiti govore rasprave O prirodi čovjeka i O prirodi kostiju. Kod angine se savjetuje puštanje krvi iz udova, a kod bolesti glave, krv se treba pustiti iz nosnica ili iz frontalne vene.
~ Bloodletting and places on the body where it was performed was discussed in On the Nature of Man and On Joints. In cases of angina, bloodletting was performed on veins on the extremities, and with the diseases of the head, from nostrils or frontal veins.

678 Brain (1986: 153)

679 Conrad (1995: 327)
Galen je odlučivao o količini puštene krvi na temelju dobi oboljelog, građe tijela, godišnjeg doba, vremenskih prilike i mjesta. O tome hoće li će pustiti krv iz vene ili iz arterije te na kojem mjestu, odlučivao je karakter bolesti. Što je bolest bila teža, to je količina puštene krvi bila veća. Smatrao je da je puštanje krvi posebno učinkovito kod vrućice te je, uz hladne napitke, to za njega bio jedini lijek.
U slučajevima posebno jake groznice pacijentu bi puštao krv do gubitka svijesti.
~ Galen developed a complex system of bloodletting. The amount of excess blood was determined by the patient's age, body build, season, weather and location. Whether to use veins or arteries for bloodletting, and where on the body, was determined by the disease. The more severe the disease, the greater the amount of excess blood. Galen thought that bloodletting was particularly effective for treating fever, and, in combination with cold drinks, it became the only treatment he used for this illness. In cases of a particularly strong fever, bloodletting was performed until the patient lost consciousness.

680 Galen je venesekciji posvetio sljedeće rasprave *De venae sectione adversus Erasistratum* (O venesekciji protiv Erasistrata), *De venae sectione adversus Erasistrateos Romae degentes* (O venesekciji protiv Erasistrata u Rimu) i De curandi ratione per venae sectionem (O terapiji venesekcijom).
~ Galen's treatises devoted to venesection: *Of venæsection in opposition to Erasistratus* (*De venae section adversus Erasistratum*), *Of venæsection, in opposition to Erasistratus of Rome* (*De venae section adversus Erasistrateos Romae degentes*), *and On Treatment by Venesection* (*De Curandi ratione per venae section*).
Manger (2005: 129)

681 Brain (1986: 124)

682 Mestel (2001)

683 Papavramidou, Christopoulou-Aletra (2009: 624)

684 Nicandrea. Theriaca et Alexipharmaca; Wells et al. (1993: 183–186); Papavramidou, Christopoulou-Aletra (2009: 624)

685 Pliny. Natural History; Papavramidou, Christopoulou-Aletra (2009: 625)

686 Aecije iz Amide (grč. Ἀέτιος Ἀμιδηνός, c. polovina 5.st. – polovina 6.st. po. Kr.), bizantski liječnik i autor medicinskih djela.
Aretej iz Kapadokije (grč. Ἀρεταῖος, c. 1.st. po. Kr.), grčki liječnik o čijem se životu zna izrazito malo. Sačuvano nam je osam njegovih djela koja se većinom bave dijagnosticiranjem bolesti.
~ Aetius of Amida (Ἀέτιος Ἀμιδηνός, c. mid. 5th century – mid. 6th century CE), Byzantine physician and author of several medical works.Aretheus of Cappadocia (Ἀρεταῖος, c. 1st century CE) famous Greek physician from the beginning of the common era. We know very little about his life. Eight of his works are preserved, mainly about diagnosis.
Aetius. Librorum Medicinalium. 134r, 100v, 122v, 127v; Aretaeus. De Curatione Acutorum Morborum.

687 Za sigurno uklanjanje Galen savjetuje primjenu soli ili praha.
~ To safely remove leeches after the procedure, Galen advised to use of salt or powder.
Galen. De hirundinibus, cucurbitula, incisione et scarificatione.

688 Koristi ih se esperimentalno. Zbog antikoagulantskih, antihistamatskih i anestetičkih spojeva koji se nalaze u njihovoj slini, upotrebljavaju se u pojedinim slučajevima tromboze i pri pojedinim zahvatima plastične kirurgije.
~ Leeches are used experimentally due to the anticoagulant, antihistamine and anesthetic compounds found in their saliva. They are used in some cases of thrombosis and in certain plastic surgery procedures.
O'Hara (1988: 1656–1658)

O PACIJENTU
~
THE PATIENT

U prijašnjim je poglavljima prikazan sažeti uvid u povijest antičke medicine, od magijsko-religijskih temelja do sofisticirane empirijske medicine. Dan je uvid u razvoj farmacije, a prikazane su i neke od bolesti s kojima su se antički liječnici suočavali, kao i raspon medicinskog instrumentarija koji su upotrebljavali.

Povijest antičke medicine kompleksna je tema koja obuhvaća široki raspon elemenata, od magijsko-religijskih, sociokulturnih do pravnih i znanstvenih. Razmišljajući o njezinom razvoju, treba imati na umu da je svaki medicinski sustav dijalog između liječnika i pacijenta koji kroz zajedničko stvaranje priče jedan drugoga legitimiziraju i omogućuju uklapanje osobnog iskustva u širi kontekst bolesti i ozdravljenja. Stoga pregled povijesti antičke medicine treba zaključiti s uvidom u položaj pacijenta u antičkoj medicini.

Koristeći prognozu kao temelj svog pristupa liječenju, Hipokrat je prvi pacijenta stavio u fokus cijelog procesa izlječenja. Uloga prognoze bila je višestruka. Da bi postavio zadovoljavajuću prognozu, Hipokratov se liječnik morao približiti pacijentu, tj. saznati o njemu što je više moguće. Podjednako ga je zanimalo pacijentovo stanje prije pojave bolesti, faktori koji su utjecali na njezinu pojavu (prehrana, klimatski uvjeti, mjesto stanovanja i sl.), kao i pacijentova očekivanja. Upravo je Hipokrat u medicinu uveo pojam uzimanja pacijentove anamneze, povijesti bolesti, kao temeljnog alata u donošenju prognoze. Prognoza je omogućavala liječniku da stekne pacijentovo povjerenje i da ga uvjeri kako bolest nije izvan njegove kontrole. Hipokratov nauk ističe individualni pristup liječenju u čijem središtu je oboljeli, a ne bolest.[689]

Od rimskih autora treba izdvojiti Celsusa koji je, iako možda i nije bio liječnik, naglašavao važnost prisnog odnosa liječnika s oboljelim. U svojim tekstovima Celsus za liječnika rabi naziv prijatelj te smatra da je međusobno povjerenje liječnika i pacijenta jedna od pretpostavki za uspješno liječenje.[690]

Galen je također polagao velike nade u odnos liječnika i pacijenta, te je i njegov pristup postavljanju dijagnoze i određivanju terapije bio je individualan, prilagođen svakom pacijentu. Za razliku od Hipokrata i njegovih sljedbenika, koji ističu da su u procesu borbe s bolešću liječnik i pacijent ravnopravni i podjednako bitni, Galen smatra da liječnik u tom odnosu mora ostati

Sl. 112. Jantarna kutija s poklopcem koja je mogla služiti za čuvanje lijekova. (Solin, 1. – 4. st., K71)
~ Fig. 112 Amber box with a lid that could have been used for storing medicaments. (Solin, 1st – 4th c., K71)

History of medicine in ancient Greece and Rome is a complex topic that includes a wide variety of subjects, from magic and religion, culture and traditions, to law and science. When considering its evolution, one should keep in mind that every medical system is a dialogue between the physician and patient who, by constructing a narrative, recognize each other and enable the personal experience to be included into a wider context of disease and healing. For that reason, an inquiry into the history of ancient medicine must include an insight into the patient's position in ancient medicine.

Making the prognosis the foundation of his approach to healing, Hippocrates was the first ancient physician for whom the patient was the focus of the entire process of medicine. In order to make a satisfying prognosis, a Hippocratic doctor had to get close to the patient, i.e. find out as much as possible about him or her. He was equally interested in the patient's condition before the onset of disease, factors that caused it (diet, environment, habitation, etc.), as well as the patient's expectations. It was Hippocrates who introduced the concept of taking a patient's medical history as a basic diagnostic tool. Prognosis allowed the physician to gain the patient's trust and to convince him or her that the disease is not beyond the physician's control. Hippocrates' teaching emphasizes the individual approach to healing with the patient in the centre, not the disease.[689]

Several Roman authors advocated these teachings in their works. Celsus stressed the importance of a close physician-patient relationship. In his works, he uses the term "friend" for a physician, and he thinks that a mutual trust between the physician and patient is one of the prerequisites for a successful treatment.[690]

Galen also considered the physician-patient relationship. His diagnostic and therapeutic approach was individual, adapted for each patient. Unlike Hippocrates and his follow-

688 Manger (2005: 95)
690 Petridou, Thumiger (2016: 336)

superioran, poput učitelja nad učenikom. Uzimanje povijesti bolesti za Galena je samo jedan od načina na koji liječnik pokazuje svoju dominaciju.[691]

Rufus iz Efeza, (grč. Ῥοῦφος ὁ Ἐφέσιος, kraj 1. i početak 2. stoljeća) u svom je djelu *Medicinska pitanj*a (Lat. *Quaestiones medicinales*) učinio još jedan iskorak u odnosu na svoje suvremenike.[692] Za njega je postupak postavljanja dijagnoze potraga za subjektivnim informacijama koje upotpunjuju objektivne činjenice (simptome bolesti). Na samom početku *Medicinskih pitanja* on poziva liječnike da postavljaju pitanja svojim pacijentima kako bi mogli što preciznije shvatiti njihovo stanje i ponuditi terapiju, pritom stavljajući naglasak na važnost slušanja pacijentovih riječi bez izostavljanja naizgled nebitnih detalja.[693] Sadržaj pacijentove priče jednako je važan kao i njegova forma — sposobnost artikuliranja, relevantnost odgovora, rupe u pamćenju, promjene karaktera, ton glasa, stanke, razdražljivost i sl. utječu na konačnu dijagnozu.[694] Rufus predlaže niz pitanja, uz napomenu da je svaki pacijent drugačiji i da se pitanja trebaju prilagoditi svakoj situaciji.[695] Pacijentovi odgovori mogu uputiti na skrivene simptome, ukazujući na važnost prihvaćanja individualnog iskustva bolesti.[697]

Priče pacijenata snažan su medij iz kojeg se može dobiti bolji uvid u stanje pacijenta. Riječ je o aktivnom i konstruktivnom procesu koji ovisi o osobnom iskustvu i kulturalnim resursima.[698] Priče su prvi korak ka izlječenju.

Usmjerenost prema tzv. narativnoj medicini, odnosno medicini koja u središte stavlja pacijentovo iskustvo, pojava je koja se počela učestalije pojavljivati prije tridesetak godina, osvješćujući da je individualno iskustvo bolesti puno šire od uobičajene povijesti bolesti.[700] Na određen način, teza koju je prije gotovo dva tisućljeća postavio Rufus iz Efeza, usmjerava modernu medicinu prema pronalaženju novih dijagnostičkih postupaka i terapija koje prihvaćaju pacijenta kao aktivnog sudionika u procesu izlječenja.

Sl. 113. Zaobljena strana kutijice ukrašena je reljefnim kružnim ukrasom. (Solin, 1. – 4. st., K71)
~ Fig. 113 Rounded side of the box was decorated with a circular relief ornament. (Solin, 1st – 4th c., K71)

Sl. 114. Detalj jantarne kutije. (Solin, 1. – 4. st., K71)
~ Fig. 114 Detail of an amber box. (Solin, 1st – 4th c., K71)

ers, who stress the equality between a physician and patient during the healing process, Galen thought that the physician is superior, like a teacher is superior to his students. For Galen, taking a patient's medical history was just one of the ways in which a physician exerts his dominance.[691]

Rufus of Ephesus, (Ῥοῦφος ὁ Ἐφέσιος), (end of 1st and the beginning of 2nd century CE) made another important step forward in his work *Medical Questions (Quaestiones medicinales)*.[692] For him, the diagnostic process is a quest for subjective information that compliments objective facts (symptoms of disease). At the beginning of *Medical Questions*, he urges physicians to ask their patients questions to better understand their condition in order to suggest an appropriate therapy. Furthermore, he emphasizes the importance of listening without omitting seemingly unimportant details.[693] The con-

691 Petridou, Thumiger (2016: 90)
692 Sideras (1995: 1085–1086)
693 Rufus. Quaestiones medicinales. 22, G.6.8–10.
694 Abou Aly (1992: 194)
695 Liječnikov je cilj dobiti uvid u pacijentove fiziološke procese, životne navike, uvjete u kojima živi, bolesti u obitelji, obrasce spavanja i snove, kao i osjećaje boli te karakter.
~ A physician's goal is to gain insight into the patient's physiological processes, habits, living conditions, family history, sleep patterns and dreams, as well as feelings of pain and character.
Abou Aly (1992: 195–196); Letts (2016: 93–94)
696 Rufus. Quaestiones medicinales. 26
697 Malterud (1995: 187)
698 Garro, Mattingly (2000: 1)
699 Letts (2014: 1016)
700 Suvremena medicina uviđa važnost uključivanja pacijenta u sve faze dijagnostičkog procesa, naglašavajući da je "medicinski dijalog osnovni instrument kroz koji se odvija paradigmatska bitka: problemi pacijenta bit će uklopljeni u biomedicinski kontekst i kontekst bolesti ili u širi i integriraniji kontekst bolesti koji uključuje pacijentovu perspektivu".
~ Contemporary medicine recognizes the importance of including patients in all phases of the diagnostic process, indicating that the "medical dialogue is the fundamental instrument through which the paradigmatic battle is waged: the patient's problem will be anchored in either a biomedical and disease context or a broader and more integrated illness context that incorporates the patient perspective".
Roter (2000: 6)

"SVE SAM OVO PROPATIO U SVOM KRATKOM ŽIVOTU"

Početak je to epitafa na steli mladog Lucija Minicija Antimiana. Spomenik su svome prerano preminulom sinu podigli otac i majka početkom 3. st. Stela se čuva u Nacionalnoj galeriji antičke umjetnosti u palači Barberini u Rimu.[701]

Lucije je preminuo u četvrtoj godini života, a u to kratko vrijeme tri je puta bio teško bolestan. Najprije je imao upalu testisa, zatim su mu počeli odumirati prsti lijeve noge, da bi na kraju preminuo zbog komplikacija uslijed upale trbuha.[702] Mnogi su autori pisali o njegovoj mogućoj bolesti, ali se ne mogu složiti o tome što bio uzročnik ovih njegovih simptoma. Moguće je da je riječ o tuberkulozi.[703]

Riječ je o jednom od najdirljivijih epitafa pisanih grčkim pismom, a ujedno je i zabilježena povijest bolesti jednog malenog dječaka.

Sl. 115. Sveta Asklepijeva životinja, zmija, čest je motiv na rimskom nakitu, posebice prstenju. (Sisak, 1. – 4. st., K7)
~ Fig. 115 Snake, an animal dedicated to Asclepius, is a frequent motif on roman jewellery, especially rings. (Sisak, 1st – 4th c., K7)

tent of the patient's narrative is as important as its form – ability to articulate words, relevance of answers, memory lapses, changes in character, tone of voice, pauses, irritability, etc. affect the final diagnosis.[694] Rufus proposes a range of questions, with a remark that every patient is different and that the questions should be modified according to the situation.[695]

Patients' narratives are a powerful medium from which one can gain a better insight into the patient's condition. It is an active and constructive process that depends on personal experience and cultural resources.[698] Narratives are the first step towards healing.

A shift towards narrative medicine, i.e. medicine that puts the patient's experience in the centre, started several decades ago, recognizing that individual experience of illness is much more complex than a traditional medical history.[700] In a way, ideas advocated by Rufus of Ephesus two millennia ago direct modern medicine in finding new diagnostic procedures and therapies that respect patients as active participants in the healing process.

"THIS I SUFFERED IN THE SHORT SPACE OF MY LIFE"

Epitaph of young Lucius Minicius Anthimianus from 3rd century CE is kept at the National Gallery of Ancient Art of Barberini Palace in Rome.[701] The monument was raised by the parents for their prematurely deceased son.

Lucius passed away when he was four years old. In that short time, he was seriously ill three times. First, he had an inflammation of the testicles, then gangrene in his left foot, only to succumb to an inflammation of the abdomen.[702] Many modern authors tried to diagnose his disease, but they could not come to a conclusion as to what could have caused all three symptoms. It is possible that young Lucius had tuberculosis, a common disease in antiquity.[703]

This monument is one of the most touching epitaphs written in the Greek alphabet, but it is also a medical history of a boy.

701 CIG 3272.
702 Meinecke (1940: 1022–31)
703 Petridou, Thumiger (2016)

K1
SL. 6
Kip boga Apolona – Sola, mramor
Privremena pohrana AMZ, VTks-2, Varaždinske Toplice, iskopavanje 2011. g.
vis. 170 cm

Djelomično sačuvan mramorni kip Apolona – Sola sa zrakastom krunom na glavi. Apolonovu kipu nedostaju dijelovi ruku, potkoljenica i stopala, a prikazan je oslonjen na tronožac oko kojeg se ovija zmija.

Početak 3.st.

Kušan Špalj (2015: kat. 71)

K2
SL. 7
Reljef Eskulapa i Higieje, mramor
Inv. br. KS-103, Zemun, iskopavanje 1989. g.
šir. 22,3 cm, vis. 21,3 cm, deb. 3,2 cm

Mramorna zavjetna ploča s reljefnim prikazom Eskulapa, Higieje i Telesfora te natpisom. Na sredini prikaza stilizirana je stela, a desno od nje stoji Eskulap. U desnoj ruci drži štap oko kojeg je omotana zmija. Lijevo od stele nalazi se Higieja koja u desnoj ruci drži pliticu, a oko lijeve ruke joj je omotana zmija. U sredini, ispred stele stoji Telesfor omotan u plašt, s kukuljicom na glavi. Iznad prikaza nalazi se urezan natpis ASCLEPIO ET HYGIE, dok je ispod prikaza natpis IVL. MAGNVS DVI.

1.– 2. st.

Brunšmid (1905: br. 103), Dautova-Ruševljan (1983: T. 20/4), CIL III S. 15137

K3
SL. 9
Glava Asklepija, mramor
Inv. br. KS-15, Dalmacija, Solin?
šir. 4,7 cm, vis. 6 cm

Mramorna glava Asklepija bila je dio manje statuete. Asklepije je prikazan s uvojcima u bradi i kosi, a oko glave ima spiralnu vrpcu. Nos i dio uvojaka su oštećeni.

2.– 3. st.

Brunšmid (1904: br. 15), Reinach (1924: sl. 6), Tadin (1979: T. 16/26 a,b)

K4
SL. 8
Glava božice Dijane, mramor
Inv. br. KS-933, Senj, iskopavanje 1949.g.
šir. 10,5 cm, vis. 17,3 cm

Mramorna glava božice Dijane pripadala je kipu manjih dimenzija. Ističe se nježnom modelacijom lica; pramenovi kose obrađeni su poput valovitih kanala i složeni u karakterističnu frizuru. Lice božice je oštećeno, nedostaje nos.

Početak 3. st.

Degmedžić (1951), Cambi (2013)

K5
SL. 14
Figura Herakla, bronca
Inv. br. A-4630, Sisak, jaružanje Kupe 1912. g.
vis. 30,6 cm, vis. post. 8,1 cm

Stojeća figura nagog Herakla na četvrtastom postolju s nožicama. Na Heraklovom licu ističu se brkovi i brada. U desnoj je ruci sačuvan kraj toljage, dok u lijevoj ruci Heraklo drži tri hesperidske jabuke.

2. st.

Brunšmid (1914: kat. 60), Tesori nazionali (1991: 134)

K6
SL. 13
Figura Telesfora, keramika
Inv. br. A-8212, Sisak
šir. 2,4 cm, vis. 7 cm

Polustatueta Telesfora ogrnutog u plašt s kukuljicom koji stoji na polukružnom postolju. Figura je sa stražnje strane šuplja.

Početak 3. st.

Neobjavljeno

K7
SL. 115
Prsten u obliku zmije, bronca
Inv. br. A-4931, Sisak
pr. 1,9 cm, deb. maks. 0,3 cm

Prsten otvorenog tipa kojem jedan kraj završava zmijskom glavom, a drugi je spiralno uvijen. Glava zmije realistično je oblikovana, s naglašenim očima i sitnim urezima. Mrežasti ukras spušta se od glave na dio tijela.

1. – 3. st.

Neobjavljeno

K8
SL. 73
Gema-intaglio, sardoniks
Inv. br. A-16061, Kostolac, otkup S. Trojanović, 1913. g.
šir. 0,96 cm, vis. 1,2 cm, deb. 0,47 cm

Ovalna gema izrađena iz sardoniksa na kojoj je prikazan Heraklo koji preko lijeve, ispružene ruke ima prebačenu lavlju kožu, a desnom se rukom naslanja na toljagu.

1. - 4. st.

Kaić (2013: kat. 87)

K9 Gema-intaglio, karneol
Inv. br. A-16126, Kostolac, otkup S. Trojanović, 1913. g.
SL. 19
šir. 1 cm, vis. 1,3 cm, deb. 0,35 cm

Ovalna gema izrađena od tamnocrvenog karneola, na kojoj su prikazani Eskulap i Salus. Eskulap u lijevoj, spuštenoj ruci drži palicu oko koje se svija zmija. Salus stoji lijevo od Eskulapa i u desnoj ruci drži pliticu iz koje pije zmija, koja je ovijena oko lijeve ruke i ramena božice.

1. – 4. st.

Kaić (2013: kat. 46)

K10 Gema-intaglio, prazem
Inv. br. A-16137, Sisak – Kupa, otkup N. Šumenovac, 1913. g.
SL. 10
šir. 0,8 cm, vis. 1,1 cm, deb. 0,3 cm

Ovalna gema prikazuje kentaura Hirona bez brade u lijevom profilu, s krznenim ogrtačem koji mu vijori iza leđa; sjedi na stražnjim nogama, s podignutom prednjom lijevom nogom i s lijevom rukom položenom na rame mladog Ahileja, nagoga tijela, koji stoji frontalno pored njega držeći liru u desnoj ruci.

1. – 4. st.

Kaić (2013: kat. 95)

K11 Gema-intaglio, karneol
Inv. br. A-16271, Sisak– Kupa
SL. 12
šir. 0,9 cm, vis. 1,2 cm, deb. 0,33 cm

Ovalna gema izrađena od narančastog karneola na kojoj je prikazana Salus. Božica u lijevoj ruci drži pateru iznad koje se izvija zmija, omotana oko desne ruke i ramena božice.

1. – 4. st.

Kaić (2013: kat. 172)

K12 Gema-intaglio, karneol
Inv. br. A-16240, Resnik
SL. 37
šir. 1,14 cm, vis. 1,2 cm, deb. 0,23 cm

Kružna gema izrađena od narančastog karneola na kojoj je prikazana Minerva kako sjedi na tronu odjevena u peplos. Lijevo od božice nalazi se štit iznad kojeg se izvija zmija.

1. – 4. st.

Maixner (1881: br. 25), Kaić (2013: kat. 136)

K13 Novac cara Domicijana, srebro
Inv. br. C26313, nepoznato nalazište
SL. 21
pr. 1,81 x 1,95 cm, tež. 3,48 g, os: 5h

Srebrni denar cara Domicijana. Na aversu se nalazi ovjenčano poprsje Domicijana u desnom profilu s natpisom CAESAR AVG F DOMITIANVS COS VII, koji teče uz rub. Na reversu je prikazana Salus, koja stoji frontalno s glavom okrenutom udesno, naslonjena na stup i hrani zmiju iz patere s natpisom PRINCEPS IVVENTVTIS, koji teče uz rub.

80. g. Domicijan (za vladavine Tita), kovnica Rim

Tip RIC II² 97

K14 Novac cara Galijena, bronca
Inv. br. C28633, Komin (skupni nalaz)
SL. 34
pr. 1,85 x 1,84 cm, tež. 2,50 g, os:12h

Brončani antoninijan cara Galijena. Na aversu je prikazano poprsje Galijena u oklopu, sa zrakastom krunom u desnom profilu, oko kojeg uz rub teče natpis GALLIENVS AVG. Na reversu je prikazana Salus, koja stoji frontalno s glavom okrenutom ulijevo, u lijevoj ruci drži skeptar te hrani zmiju koja se uzdiže s oltara, iz patere koju drži u desnoj ruci. Oko Salus teče natpis SALVS AVG sa slovom P u desnom polju.

267. - 268. g., kovnica Siscia

Tip: RIC 581; Göbl 1462b

K15 Novac cara Komoda, bronca
Inv. br. A-6848, Thyatira, Lidija
SL. 18
pr. 4,36 x 4,24 cm, tež. 39,29 g

Brončani novac cara Komoda kovan u Lidiji pod magistratom Artemidorosom II Florouom. Na aversu je ovjenčano poprsje Komoda u profilu desno, s oklopom i paludamentom i natpis AVT KAI Λ AIΛ AVP KOMMOΔOC. Na reversu Asklepije stoji frontalno, glava mu je okrenuta na desnu stranu, u ruci drži čvorasti štap obavijen zmijom. Na desnoj strani, goli Apolon (Tyrimnaios) stoji frontalno, s glavom ulijevo, na glavi nosi radijalnu krunu, a u rukama drži lovorovu grančicu i dvostranu sjekiru. Po rubu teče natpis ΕΠΙ CTPA ΑΡΤΕΜΙΔΩΡΟV Β ΦΛΩΡΟV, u odsječku ΘVATEIPHNΩN.

c. 191. – 192. g.

Tip: RPC4 (online), 1553 (privremeni broj); SNG Munich 636

K16 Tarionik, kamen
Inv. br. A-18894, Sisak
SL. 76
vis. 5,3 cm, pr. dna 11 cm

Tarionik grube izrade od sivog kamena na dijelovima oštećen. S vanjske strane sačuvana dva četvrtasta izbojka.

1. – 4. st.

Neobjavljeno

K17 Tučak, mramor
Inv. br. A-13503, Hrtkovci, Srbija
SL. 77
duž. 6,9 cm, pr. 2,5 cm

Lijepo izrađen mramorni tučak, oblikovan poput slova L, uglačane površine.

1. – 4. st.

Gregl (1983: T. 2/4), Tesori nazionali (1991: 158)

K18 Pločica za razmazivanje, dijabaz
Inv. br. A-19210, Sisak
SL. 101/1
duž. 8,8 cm, šir. 5,1 cm

Pravokutna pločica za razmazivanje izrađena iz tamnosivog dijabaza, s koso položenim bočnim stranama. Na široj površini načinjeno je udubljenje za lakše apliciranje tvari.

1. – 4. st.
Neobjavljeno

K19 Pločica za razmazivanje, dijabaz
Inv. br. A-8059, Sisak
SL. 101/2
duž. 8,2 cm, šir. 5,1 cm

Pravokutna pločica za razmazivanje izrađena iz tamnosivog dijabaza. Bočne strane koso su položene.

1. – 4. st.

Neobjavljeno

K20 Pločica za razmazivanje, ahat
Inv. br. A-19217, nepoznato nalazište
SL. 101/3
duž. 7,5 cm, šir. 4,3 cm

Pravokutna pločica za razmazivanje kosih bočnih strana, vrlo fine izrade.

1. – 4. st.

Neobjavljeno

K21 Vaga nejednakih krakova, bronca/željezo
Inv. br. A-9874, Stara Pazova, Srbija
SL. 103
duž. 18,7 cm

103A Vaga nejednakih krakova. Krak poligonalnog presjeka izrađen je od bronce; na tri su strane vidljive oznake za mjerenje. Sačuvana su dva brončana lanca i jedna kuka za vješanje predmeta. Jedan je brončani lanac sačuvan u punoj duljini s kukom na kraju, dok je drugi sačuvan polovično, bez kuke. Sačuvana je željezna kuka za vješanje cijele vage.

1. – 4. st.

Neobjavljeno

K22 Poluga vage, bronca
Inv. br. A-4443, Sisak, jaružanje Kupe
SL. 102
1912. g.
102A duž. 9 cm

Poluga vage nejednakih krakova malih dimenzija. Poluga je romboidnog presjeka i završava lukovicom na jednom kraju. Na drugom je kraju sačuvana ušica s jednom tankom kukom. Poluga na gornjem rubu ima mjerne oznake.

1. - 4. st.

Neobjavljeno

K23 Poluga vage, bronca
Inv. br. A-4443-1, Sisak, jaružanje Kupe
SL. 81/1
1912. g.
duž. 15,8 cm

Poluga vage jednakih krakova s po jednom ušicom na svakom kraju i jednom središnjom ušicom.

1. – 4. st.

Neobjavljeno

K24 Recipijent vage, bronca
Inv. br. A-6318-1, Sisak, jaružanje Kupe
SL. 81/4
1913. g.
pr. 6 cm

Okrugli recipijent vage izrađen je od tankog lima te je perforiran na četiri mjesta uz rub. S unutrašnje strane, na sredini, naglašen je koncentričnim brazdama.

1. - 4. st.

Neobjavljeno

K25 Recipijent vage, bronca
SL. 81/2 Inv. br. A-6318-2, Sisak, jaružanje Kupe 1913. g.
pr. 6 cm

Okrugli recipijent vage izrađen je od tankog lima te je perforiran na četiri mjesta uz rub.

1. – 4. st.

Neobjavljeno

K26 Utezi za vagu u obliku diska, 6 komada, bronca
SL. 81/3, 82 Inv. br. A-6716, Sisak
1. pr. 1,4 cm, tež. 11,39 g
2. pr. 1,4 cm, tež. 3,83 g
3. pr. 1,3 cm, tež. 2,92 g
4. pr. 1,1 cm, tež. 2,52 g
5. pr. 1,3 cm, tež. 1,84 g
6. pr. 1,1 cm, tež. 2,32 g

Utezi za vagu u obliku diskova različitih veličina. Jedan od utega inv. br. A-6716-6 ima urezane oznake mjere. S jedne strane je ukrašen nizom punktiranih točkica i slovom N u visokom reljefu, dok se na drugoj nalazi slovo H u visokom reljefu.

1. – 4. st.

Neobjavljeno

K27 Uteg za vagu u obliku diska, bronca
SL. 83 Inv. br. A-6402, Sisak, otkup M. Hrnjak, 1925. g.
pr. 1,2 cm, tež. 5,2 g

Uteg za vagu u obliku diska. Na površini ima urezan niz nepravilnih crtica.

1. – 4. st.

Neobjavljeno

K28 Cjedilo, olovo
SL. 78/1 Inv. br. A-5233-3, Sisak– Kupa, otkup 1913. g.
pr. 8,8 cm

Kružno olovno cjedilo s probušenim kružnim otvorima nepravilnog rasporeda.

1. – 4. st.

Neobjavljeno

K29 Cjedilo, olovo
SL. 78/2 Inv. br. A-5233-2, Sisak– Kupa, otkup 1913. g.
pr. 4,4 cm

Kružno olovno cjedilo s linearno probušenim kružnim otvorima različitih veličina.

1. – 4. st.

Neobjavljeno

K30 Zdjelica, keramika
SL. 16/2 Inv. br. A-GV-672, južna Italija
vis. 3,8 cm, pr. rub. 5,6 cm, pr. dna 3,4 cm

Zdjelica valjkastog oblika i zadebljalog oboda, na visokoj nožici. Izrađena je od crvene gline, a na površini se nalazi crni firnis.

4. – 3. st. pr. Kr.

Neobjavljeno

K31 Zdjelica, keramika
SL. 16/1 Inv. br. A-GV-674, južna Italija
vis. 4,8 cm, pr. rub. 6,5 cm, pr. dna 3,9 cm

Zdjelica valjkastog oblika i zadebljalog oboda, na visokoj nožici. Izrađena je od crvene gline, a na površini se nalazi crni firnis.

4. – 3. st. pr. Kr.

Neobjavljeno

K32 Alabastron, keramika
SL. 16/4 Inv. br. A-GV-819, južna Italija
vis. 10,6 cm, pr. trb. 4,2 cm, pr. dna 2,6 cm

Alabastron kruškolikog tijela, ravne stajaće plohe i naglašenog, zadebljalog ruba. Izrađen je od žutosive gline.

4. – 3. st. pr. Kr.

Neobjavljeno

K33 Alabastron, keramika
SL. 16/3 Inv. br. A-GV-823, južna Italija
vis. 8 cm, pr. trb. 4,8 cm, pr. dna 2,4 cm

Alabastron kruškolikog tijela, ravne stajaće plohe i širokog vrata. Izrađen je iz crvene gline s tragovima crvenog premaza na površini.

4. – 3. st. pr. Kr.

Neobjavljeno

K34 Gutus, keramika
SL. 16/7 Inv. br. A-GV-864, južna Italija
vis. 6 cm, pr. trb. 9,7 cm, pr. dna 6,5 cm

Trbušasti gutus s kosom položenim

izljevkom koji završava prstenasto. Tijelo gutusa je kanelirano, površina je prekrivena crnim firnisom. Gutus ima jednu visoku prstenastu dršku.

4. – 3. st. pr. Kr.

Neobjavljeno

K35 Gutus, keramika
SL. 16/8 Inv. br. A-GV-868, južna Italija
vis. 5,3 cm, pr. trb. 7,3 cm, pr. dna 4,9 cm

Trbušasti gutus s kratkim izljevkom. Središnji otvor na gutusu je izdignut i istaknut. Tijelo gutusa je koso kanelirano, površina je prekrivena crnim firnisom. Gutus je imao jednu prstenastu dršku, koja je oštećena.

4. – 3. st. pr. Kr.

Neobjavljeno

K36 Posuda s poklopcem/piksida, keramika
SL. 16/5 Inv. br. A-GV-1065, južna Italija
vis. 7,2 cm, pr. dna 3,8 cm
17

Niska posuda s poklopcem, piksida s arkadno ukrašenim ručkama i crveno izvedenim figurama na crnoj podlozi.

4. – 3. st. pr. Kr.

Neobjavljeno

K37 Vrč, keramika
SL. 16/6 Inv. br. A-GV-1175, južna Italija
vis. 9 cm, pr. rub. 4,4 cm, pr. dna 4,2 cm
20

Trbušasti vrč horizontalnog ruba s plitkim kanelurama. Ispod trakaste drške koja spaja vrh trbuha i vrh vrata urezani znak . Izrađen je iz crvene gline, a površina mu je prekrivena sjajnim firnisom.

4. – 3. st. pr. Kr.

Neobjavljeno

K38 Vrč, terra sigillata
SL. 33/4 Inv. br. A-8149, Sisak
vis. 16,2 cm, pr. dna 4,2 cm

Vrč tipa Conspectus Kc s koljenastom tordiranom drškom. Oblikom podsjeća na lekit. Pripada sjevernoitalskoj skupini sigillate.

2. polovina 1. st.

Makjanić (1995: T. 66/185)

K39 Zdjelica, terra sigillata
SL. 33/3 Inv. br. A-7857-1, Sisak
vis. 3,1 cm, pr. dna 3,6 cm

Konična zdjelica tipa Conspectus 43. Na rubu je izveden ukras u tehnici barbotina. Pripada Tardo-padana skupini italske sigillate.

Polovina 1. st. – polovina 2. st.

Vikić-Belančić (1958: sl. 8), Makjanić (1995: T. 65/169)

K40 Zdjelica, terra sigillata
SL. 33/1 Inv. br. A-8147, Sisak
vis. 4,2 cm, pr. rub. 8,5 cm

Konična zdjelica tipa Conspectus 34. Na rubu je izveden ukras rozeta u tehnici barbotina. Na dnu se nalazi pečat in planta pedis „ALY“ (majstor Alyptus). Pripada aretinskoj skupini terrae sigillate.

Sredina 1. st.

Vikić-Belančić (1963: sl. 3), Makjanić (1995: T. 61/74)

K41 Zdjelica, terra sigillata
SL. 33/2 Inv. br. A-8150, Sisak
vis. 8,3 cm, pr. rub. 14,5 cm, pr. dna 5,9 cm

Konična zdjela tipa Dragendorff 33 na niskoj, okrugloj nožici. Na dnu je sačuvan dio pečata „IANI“. S donje strane dna urezan je grafit. Pripada južnoitalskoj skupini sigillate.

Sredina 2. st. - početak 3. st.

Neobjavljeno

K42 Balzamarij, staklo
SL. 22/4 Inv. br. A-7668, Sisak, otkup Tomac, 1926. g.
vis. 9,2 cm, pr. rub. 1,9 cm

Balzamarij cjevastog tijela i dugog, cilindričnog vrata. Izrađen iz svijetlozelenog stakla.

1. st.

Neobjavljeno

K43 Balzamarij, staklo
SL. 22/6 Inv. br. A-7670, Sisak, dar A. Colussi, 1909. g.
vis. 7,1 cm, pr. rub. 1,6 cm, pr. trb. 2,2 cm

Balzamarij stožastog tijela i kratkog, cilindričnog vrata. Izrađen je iz svijetlozelenog

stakla.

1. – 3. st.

Neobjavljeno

K44
SL. 22/11
Balzamarij, staklo
Inv. br. A-11024, Bakar
vis. 9,4 cm, pr. rub. 3,6 cm, pr. dna 2 cm
Balzamarij četvrtastog tijela s naborima i udubljenjima. Dno je usko i na sredini udubljeno. Izrađen je od tankog stakla bijele boje.
Prva polovina 3. st.
Gregl, Lazar (2008: T. 21/2)

K45
SL. 22/10
Balzamarij, staklo
Inv. br. A-11045, Bakar, iskopavanje 1882. g.
vis. 10,3 cm, pr. rub. 2,5 cm, pr. dna 2 cm
Balzamarij stožastog tijela i dugog, cilindričnog vrata koji je na prelasku u tijelo profiliran.
2. – 3. st.
Ljubić (1882: br. 33), Gregl, Lazar (2008: br. 48)

K46
SL. 22/7
Balzamarij, staklo
Inv. br. A-11047, Bakar, iskopavanje 1882. g.
vis. 11,5 cm, pr. rub. 2,4 cm, pr. dna 3 cm
Balzamarij stožastog tijela i dugog vrata koji je na prelasku u tijelo profiliran.
Druga polovina 1. st. – prva polovina 3. st.
Ljubić (1882: br. 33), Gregl, Lazar (2008: br. 49)

K47
SL. 22/2
24/2
Balzamarij, staklo
Inv. br. A-11082, Bakar
vis. 3,6 cm, pr. rub. 1,2 cm, pr. dna 1 cm
Balzamarij piriformnog tijela i kratkog vrata, izrađen od stakla tamnoplave boje.
1. st.
Gregl, Lazar (2008: T. 20/5)

K48
SL. 22/1
24/1
Balzamarij, staklo
Inv. br. A-11087, Bakar
vis. 8,4 cm, pr. rub. 2,4 cm, pr. dna 2 cm
Balzamarij kruškolikog tijela i kratkog vrata, izrađen od tamnoplavog neprozirnog stakla.
Kraj 1. st. pr. Kr. – početak 1. st. po. Kr.
Damevski (1976: T. 3/1), Gregl, Lazar (2008: T. 20/7)

K49
SL. 22/9
Balzamarij, staklo
Inv. br. A-11328a, Bakar, iskopavanje 1882. g.
vis. 11 cm, pr. rub. 2,2 cm, pr. dna 2 cm
Balzamarij cjevastog tijela, dugog vrata i uskog, ravnog dna.
2. – 3. st.
Gregl, Lazar (2008: T. 17/5)

K50
SL. 22/8
Balzamarij, staklo
Inv. br. A-11331, Bakar, iskopavanje 1882. g.
vis. 8,4 cm, pr. rub. 2,2 cm, pr. dna 2 cm
Balzamarij malog trokutastog tijela, ravnog dna i dugačkog vrata.
Druga polovina 1. st. – 2. st.
Ljubić (1882: br. 36), Gregl, Lazar (2008: T. 17/8)

K51
SL. 22/3
29
Balzamarij, staklo
Inv. br. A-15784, Topusko
vis. 8,7 cm, pr. trb. 5,8 cm, pr. rub. 4,9 cm
Balzamarij niskog spljoštenog tijela i cilindričnog vrata.
2. st.
Neobjavljeno

K52
SL. 22/5
Balzamarij, staklo
Inv. br. A-17773, nepoznato nalazište, zbirka Pavletić
vis. 14,7 cm, pr. rub. 3 cm, pr. dna 5 cm
Balzamarij trokutastog tijela i visokog, uskog vrata izrađen od prozirnog bijelog stakla.
1. – 2. st.
Na tragovima vremena (2003: br. 115c)

K53
SL. 22/12
Balzamarij, staklo
Inv. br. A-17769, nepoznato nalazište, otkup 2001. g.
vis. 7,1 cm, pr. rub. 1,2 cm, pr. dna 1,8 cm
Balzamarij ovalnog tijela izrađen od žutosmeđeg stakla.
1. st.
Na tragovima vremena (2003: br. 107a)

K54 Gutus, staklo
Inv. br. A-11739, Stenjevec
SL. 23
šir. 5,2 cm, vis. 8,1 cm, pr. rub. 3,6 cm

Stakleni gutus u obliku ptice, trbušastog tijela s uskim izvučenim lijevkom, cilindričnim vratom i ravnim rubom, zaokrenutim prema unutra. Dno je blago uvučeno. Izrađen je od stakla svijetlozelene boje.

1. – 2. st.

Neobjavljeno

K55 Urneta, staklo
Inv. br. A-11295, Budva, otkup 1941. g.
SL. 32/1
vis. 5,7 cm, pr. rub. 4,1 cm, šir. dna 3,4 cm

Mala četvrtasta urneta razgrnutog ruba i dna uvučenog na sredini. Na bočnim stranama ima konkavna udubljenja. Izrađena od stakla svijetlozelene boje.

1. st.

Neobjavljeno

K56 Urneta, staklo
Inv. br. A-11298-1, Budva, otkup 1940. g.
SL. 32/2
vis. 5,7 cm, pr. rub. 5,9 cm, pr. dna 3,6 cm

Mala trbušastasta urneta razgrnutog ruba i dna uvučenog na sredini. Izrađena od stakla svijetlozelene boje.

1. st.

Neobjavljeno

K57 Boca, staklo
Inv. br. A-17768, nepoznato nalazište, otkup 2001. g.
SL. 31/1
vis. 7,43 cm, pr. rub. 2 cm, pr. dna 2,8 cm

Boca trbušastog tijela i uskog vrata. Vrat završava ravnim rubom prema kojem se lagano širi. Na dnu je vidljiv otisak metalnog držača. Izrađena je od zelenoljubičastog stakla.

3. – 4. st.

Na tragovima vremena (2003: br. 124)

K58 Boca, staklo
Inv. br. A-17781, nepoznato nalazište, otkup 2001. g.
SL. 31/2
vis. 15,2 cm, pr. rub. 4 cm, pr. dna 4 cm

Boca čunjastog tijela s naglašenim prijelazom u vrat koji završava ljevkastim izljevom. Izrađena je od svijetlozelenog stakla.

1. st.

Na tragovima vremena (2003: br. 104)

K59 Boca, staklo
Inv. br. A-17782, nepoznato nalazište, otkup 2001. g.
SL. 31/3
vis. 13,8 cm, pr. rub. 3 cm, pr. dna 4 cm

Boca koničnog tijela i uskog vrata izrađena od svijetlozelenog stakla.

1. st.

Na tragovima vremena (2003: br. 105)

K60 Vrč, staklo
Inv. br. A-17766, nepoznato nalazište, otkup, 2001. g.
SL. 30
vis. 6,8 cm, pr. rub. 2,2 cm, pr. dna 1,1 cm

Vrčić ovalnog tijela s reljefnim ukrasom i jednom ručkom, izrađen iz ljubičastog stakla.

1. st.

Na tragovima vremena (2003: br. 102)

K61 Stakleni štapići, staklo
Inv. br. A-19216, Sisak
SL. 75
duž. 7,8 – 16,2 cm, pr. 0,3 – 1 cm

Tordirani stakleni štapići od bijelog, žutozelenog i tirkiznog stakla. Svi su fragmentirani.

1. – 2. st.

Neobjavljeno

K62 Cilindrična kutija, olovo
Inv. br. A-18597, Sisak, jaružanje Kupe 1912. g.
SL. 72
vis. 3,2 cm, šir. dna 3,5 cm

Cilindrična olovna kutija manjih dimenzija, deformirana i oštećena. Rub kutije je ravan. Dno je ukrašeno točkastom vrpcom uz rub, a u sredini se nalazi reljefni natpis u tri reda. "L/SABIN/ROMA".

1. – 4. st.

Neobjavljeno

K63 Cilindrična kutija s poklopcem, olovo
Inv. br. A-9843a (kutija), A-9843b (poklopac), Split
SL. 80/4
vis. 5,3 cm, pr. dna 6,3 (kutija)
vis. 3,4 cm, pr. 7,3 (poklopac)

Cilindrična kutija s pripadajućim poklopcem. I kutija i poklopac su oštećeni.

1. – 4. st.

Neobjavljeno

K64 Cilindrična kutija, olovo
SL. 80/3 Inv. br. A-5227, Sisak
vis. 3 cm, pr. rub. 3,3 cm, pr. dna 3,1 cm

Cilindrična olovna kutija s ravnim dnom i ravnim rubom dobre izrade.

1. – 4. st.

Neobjavljeno

K65 Poklopac kutije, olovo
SL. 80/2 Inv. br. A-8235, Sisak
vis. 1,1 cm, pr. rub. 3,7 cm

Cilindrični, olovni poklopac oštećenog ruba. Na sredini je poklopac lagano konveksan.

1. – 4. st.

Neobjavljeno

K66 Poklopac kutije, olovo
SL. 80/5 Inv. br. A-8033, Sisak
vis. 1,5 cm, pr. 6,5 cm

Cilindrični, ravni, olovni poklopac ravnog ruba.Vanjska je strana ukrašena s četiri urezane koncentrične kružnice.

1.– 4. st.

Neobjavljeno

K67 Cilindrična kutija, srebro
SL. 80/1 Inv. br. A-19220, nepoznato nalazište
vis. 4,9 cm, pr. rub. 3,9 cm, pr. dna 4,1 cm

Oštećena cilindrična kutijica izrađena iz srebrnog lima. Vanjski rub dna i stijenke ukrašene su trima koncentričnim rebrima. Dno je u sredini konkavno.

1. – 4. st.

Neobjavljeno

K68 Cilindrična kutija, kost
SL. 80/7 Inv. br. A-9987, Bakar, 1881. g.
vis. 5 cm, pr. rub. 3 cm, pr. dna 3,5 cm

Cilindrična koštana kutija ravnog dna i ravnog ruba. Stijenke su profilirane koncentričnim prstenastim proširenjima.

1. – 4. st.

Neobjavljeno

K69 Poklopac kutije, kost
SL. 80/8 Inv. br. A-19218, Solin
pr. 3 cm, deb. 0,4 cm

Kružni koštani poklopac kutije koji oblikom podsjeća na žeton. Na sredini ima cilindrični držač i ukrašen je koncentričnim urezom.

1. – 4. st.

Neobjavljeno

K70 Cilindrična kutija, rog
SL. 80/6 Inv. br. A-9811, Solin, otkup
vis. 6 cm, pr. 2,8 cm

Cilindrična kutija, oštećenog dna i stijenki. Na kutiji su prikazana dva Erota u letu, okrenuta jedan prema drugome. Prema karakteristikama prikaza Erota (mali dječaci punašna lica) datiraju se u razdoblje careva Trajana i Hadrijana.

Prva polovica i sredina 2. st.

Neobjavljeno

K71 Kutija, jantar
SL. 112, 113, 114 Inv. br. A-19219, Solin
duž. 8,5 cm, šir. 4 cm

Duguljasta jantarna kutija, nejednako oblikovanih završetaka, na jednom kraju ravnog, a na drugom kraju zaobljenog ruba, bočni krajevi oblo oblikovani. Na ravnom kraju ukras urezanog diska, na zaobljenom kraju ukras oštećene ispupčene zavojnice. Gornja strana kutijice je ravna sa duguljastim otvorom u koji se umeće poklopac. Po sredini zaobljenog dna nalazi se izdignuto rebro kao stajaća ploha. Kutijica je fragmentirana te su joj djelovi restaurirani.

1. – 4. st.

Neobjavljeno

K72 Nož, željezo/bronca
SL. 27/2 Inv. br. A-2170, Sisak
duž. 12,9 cm, duž. ošt. 7,9 cm, šir. ošt. 1,4 cm

Željezni nož sa zakrivljenom brončanom drškom koja završava pravokutnim profiliranim gumbom.

1. – 4. st.

Neobjavljeno

K73 Nož, željezo
Inv. br. A-2295, Sisak, jaružanje Kupe 1912. g.
SL. 27/3 duž. 10 cm, duž. ošt. 7,9 cm, šir. ošt. 1 cm

Željezni nož s ravnom oštricom i prstenom na kraju drške.

1. – 4. st.

Neobjavljeno

K74 Nož, željezo
Inv. br. A-2297, Sisak
SL. 27/1 duž. 15,4 cm, duž. ošt. 9 cm, šir. ošt. 1,7 cm

Željezni nož s ravnom oštricom i ukrašenom drškom. Drška završava s polukružnim, prebačenim krajem.

1. – 4. st.

Neobjavljeno

K75 Nož, željezo
Inv. br. A-6745, Sisak, jaružanje Kupe
SL. 27/4 duž. 14,3 cm, duž. ošt. 10 cm, šir. ošt. 1,7 cm

Zakrivljeni željezni nož, u obliku srpa, s ravnom oštricom. Nedostaje mu drška.

1. – 4. st.

Neobjavljeno

K76 Škare, željezo
Inv. br. A-2703, Sisak, jaružanje Kupe 1912. g.
SL. 28/1 duž. 11,6 cm, duž. ošt. 6,8 cm, šir. ošt. 1,4 cm

Jednodijelne željezne škare s drškom spojenom u obliku slova U.

1. – 4. st.

Neobjavljeno

K77 Škare, željezo
Inv. br. A-3168, Sisak, jaružanje Kupe 1912. g.
SL. 28/2 duž. 4,6 cm, duž. ošt. 2,2 cm, šir. ošt. 0,7 cm

Jednodijelne željezne škare malih dimenzija s drškom spojenom u obliku slova U.

1. – 4. st.

Neobjavljeno

K78 Britva, željezo
Inv. br. A-2751-1, Sisak – Kupa, dar A. Bukvić, 1909. g.
SL. 25/2 duž. 11,8 cm, šir. ošt. 1,6 cm

Ravna željezna britva s prema gore savijenom drškom koja završava malim okruglim zadebljanjem.

1. – 4. st.

Neobjavljeno

K79 Britva, željezo
Inv. br. A-2751-2, Sisak – Kupa, dar A. Bukvić 1909. g.
SL. 25/3 duž. 12,5 cm, šir. ošt. 1,8 cm

Željezna britva zakrivljene oštrice s prema dolje savijenom drškom koja završava petljom.

1. – 4. st.

Neobjavljeno

K80 Britva, željezo
Inv. br. A-2298, Sisak – Kupa, dar A. Colussi, 1907. g.
SL. 25/1 duž. 6,7 cm, duž. ošt. 1,6 cm

Željezna britva malih dimenzija. Drška je savinuta prema gore i završava spiralno.

1. – 4. st.

Neobjavljeno

K81 Ulomak pile, bronca
Inv. br. A-3095, Sisak
SL. 26 duž. 7,5 cm, šir. max. 4,1 cm

Ulomak nazubljene pile sa zaobljenim vrhom. Pri vrhu pila je perforirana malim kružnim otvorom.

1. – 4. st.

Neobjavljeno

K82 Strigil, željezo
Inv. br. A-5881, Sisak
SL. 62 duž. 7,5 cm, šir. max. 4,1 cm

Željezni strigil s jednostavnom drškom.

1. – 4. st.

Neobjavljeno

K83 Igle, bronca, 10 komada
Inv. br. A-4528, Sisak
SL. 35 duž. 3,7 – 10,5 cm, duž. ušice 0,1 – 0,7 cm

Brončane igle različitih veličina, okruglog i poligonalnog presjeka s ušicama pravokutnog oblika.

1. – 4. st.

Neobjavljeno

Dvostruke igle

K84
SL. 36/1
85/1 Dvostruka igla, kost
Inv. br. A-7315, Sisak, dar društva "Siscia"
duž. 12,5 cm, šir. 0,55 cm
Četvrtasti držak koji se na oba kraja sužava u igle kružnog presjeka.
1. – 4. st.
Neobjavljeno

K85
SL. 36/2
85/2 Dvostruka igla, bronca
Inv. br. A-4451-5, Sisak, jaružanje Kupe 1912. g.
duž. 14,2 cm, pr. drš. 3,5 cm
Držak kružnog presjeka koji se s obje strane sužava u zašiljene igle.
1. – 4. st.
Gregl (1982: T. 8/5)

K86
SL. 36/3
85/3 Dvostruka igla, bronca
Inv. br. A-4451-3, Sisak, jaružanje Kupe 1912. g.
duž. 12,7 cm, pr. drš. 0,35 cm
Držak kružnog presjeka s jedne strane sužava se u dugu zašiljnu iglu, dok s druge strane ima nagli prijelaz u kratku iglu.
1. – 4. st.
Neobjavljeno

K87
SL. 36/4
85/4 Dvostruka igla, bronca
Inv. br. A-6389-1, Sisak
duž. 10 cm, pr. drš. 0,3 cm
Tordirani držak na oba kraja završava prstenastim ukrasima i kratkim zašiljenim iglama.
1. – 4. st.
Gregl (1982: T. 8/4)

K88
SL. 36/5
85/5 Dvostruka igla, bronca
Inv. br. A-4486, Sisak
duž. 9,5 cm, šir. drš. 0,4 cm
Četvrtasti držak koji se na jednom kraju sužava u iglu kružnog presjeka, dok mu drugi kraj završava iglom trokutastog presjeka.
1. – 4. st.
Neobjavljeno

Spatule

U Zbirci se nalazi 61 primjeraka koštanih i metalnih spatula. Prema proširenju na jednom kraju ili recipijentu možemo ih podijeliti na one s ravnim pločastim ili blago konkavnim te recipijentom u obliku lancete. Ravni recipijent može biti u obliku pravokutne pločice (5), listolike pločice (7), listolike pločice s rombičnim proširenjem (6), trokutastim proširenjem (18) i lancete (2). Lagano konkavnu pločicu imaju spatule s trokutastom pločicom (17). Svi navedeni oblici završavaju na drugom kraju maslinastim proširenjem ili zašiljenim vrhom. Poseban oblik pokazuju koštane spatule koje umjesto pločastog proširenja imaju udubljenje na vrhu (10), a kod sva četiri u potpunosti sačuvana primjerka, drugi kraj završava zašiljenim vrhom. Držači spatula najčešće su glatki, a mogu biti kružnog ili poligonalnog presjeka. Kod manjeg broja primjeraka javljaju se kanelirane drške (2) ili drške s vretenastim zadebljanjima (2). Jedan dio spatula na prijelazu drške u recipijent ima razdjelnik u obliku niza prstenastih ukrasa ili pločastog rombičnog proširenja.

K89
Spatule, grupno
Inv. br. A-4407-2-5, A-4412-1, A-4437-4, 6, 9-11, Sisak
duž. 10,8 – 22,7 cm, šir. rec. 1 – 1,7 cm, pr. drš. 0,2 – 0,4 cm
1. – 4. st.
Neobjavljeno

K90
SL. 38
39
87/3 Spatula, bronca
Inv. br. A-4483, Sisak
duž. 13,4 cm, duž. rec. 5,5 cm, šir. rec. 0,8 cm, pr. drš. 0,2 cm
Fragmentirana spatula, jedan kraj završava pravokutnom pločicom zaobljenih rubova, a držak je gladak i kružnog presjeka.
1. – 4. st.
Neobjavljeno

K91
SL. 40/1 88/1

Spatula, bronca
Inv. br. A-4482-1, Sisak
duž. 16,1 cm, šir. rec. 0,8 cm,
pr. drš. 0,3 cm

Glatki držač kružnog presjeka na jednom kraju završava listolikom pločicom, a na drugom maslinastim proširenjem.

1. – 4. st.

Neobjavljeno

K92
SL. 40/2 88/3

Spatula, bronca
Inv. br. A-4480, Sisak, 1912. g.
duž. 14,6 cm, šir. rec. 0,5 cm,
pr. drš. 0,15 cm

Glatki držač kružnog presjeka na jednom kraju završava listolikom pločicom, a na drugom maslinastim proširenjem. Na dijelu držača prema recipijentu je niz sastavljen od tri prstenasta i jednog kružnog ukrasa.

1. – 4. st.

Neobjavljeno

K93
SL. 40/3 88/2

Spatula, bronca
Inv. br. A-4409, Sisak, jaružanje Kupe
1912. g.
duž. 14,3 cm, šir. rec. 0,55 cm,
pr. drš. 0,25 cm

Kanelirani držač na jednom kraju završava listolikom pločicom, a na drugom maslinastim proširenjem. Na dijelu držača prema recipijentu niz od četiri prstenasta ukrasa.

1. – 4. st.

Neobjavljeno

K94
SL. 41/2

Spatula, bronca
Inv. br. A-4436, Sisak, dar A. Bukvić,
1909. g.
duž. 13,8 cm, šir. rec. 1,3 cm,
pr. drš. 0,3 cm

Kanelirani držač na jednom kraju završava listolikim recipijentom s rombičnim proširenjem, dok se na drugom kraju držača nalaze dva prstenasta ukrasa; nedostaje završetak.

1. – 4. st.

Gregl (1982: T. 9/2),
Tesori nazionali (1991: br. 155/30)

K95
SL. 41/1 88/4

Spatula, bronca
Inv. br. A-4436-1, Sisak, otkup A. Bukvić,
1909. g.
duž. 10,6 cm, šir. rec. 1,4 cm,
pr. drš. 0,35 cm

Fragmentirani držač poligonalnog presjeka na sačuvanom kraju završava listolikom pločicom s rombičnim proširenjem.

1. – 4. st.

Neobjavljeno

K96
SL. 43/1 86/1

Spatula, bronca
Inv. br. A-4407-6, Sisak, jaružanje Kupe
1912. g.
duž. 24,6 cm, šir. rec. 1 cm, pr. drš. 0,4 cm

Spatula čiji jedan kraj završava trokutastom ravnom pločicom, a drugi je zašiljen, okruglog presjeka.

1. – 4. st.

Tesori nazionali (1991: br. 155/33)

K97
SL. 43/2 86/2

Spatula, bronca
Inv. br. A-4407-7, Sisak, jaružanje Kupe
1912. g.
duž. 19,2 cm, šir. rec. 0,9 cm,
pr. drš. 0,25 cm

Spatula čiji jedan kraj završava trokutastom ravnom pločicom, a drugi je zašiljen, okruglog presjeka.

1. – 4. st.

Tesori nazionali (1991: br. 155/31)

K98
SL. 42/4 86/5

Spatula, bronca
Inv. br. A-4437-13, Sisak, dar A. Bukvić,
1909. g.
duž. 16,7 cm, šir. rec. 1,6 cm,
pr. drš. 0,4 cm

Držač kružnog presjeka kojem jedan kraj završava trokutastim konkavnim recipijentom, a drugi je zašiljen. Trokutasti recipijent na sredini je perforiran.

1. – 4. st.

Gregl (1982: T. 9/4)

K99
SL. 42/3 86/3

Spatula, bronca
Inv. br. A-4437-14, Sisak, dar A. Bukvić,
1909. g.
duž. 19,8 cm, šir. rec. 1,5 cm,
pr. drš. 0,25 cm

Držač kružnog presjeka kojem jedan

kraj završava trokutastim konkavnim recipijentom, a drugi je zašiljen te mu nedostaje vrh.

1. – 4. st.

Neobjavljeno

K100 Spatula, bronca
SL. Inv. br. A-4437-15, Sisak, dar A. Bukvić, 1909. g.
42/2 duž. 18,4 cm, šir. rec. 1,9 cm,
86/4 pr. drš. 0,35 cm

Držač kružnog presjeka kojem jedan kraj završava trokutastim konkavnim recipijentom, a drugi se sužava te mu nedostaje vrh.

1. – 4. st.

Neobjavljeno

K101 Spatula, kost
SL. Inv. br. A-7347, Sisak, otkup H. Lederer
42/1 duž. 7,8 cm, šir. rec. 1,2 cm,
86/6 pr. drš. 0,55 cm

Držač kružnog presjeka kojem jedan kraj završava trokutastim konkavnim recipijentom, a drugi se sužava te mu nedostaje vrh.

1. – 4. st.

Gregl (1982: T. 9/5)

K102 Spatula, kost
SL. Inv. br. A-7287-2, Sisak
2 duž. 12,4 cm, šir. rec. 0,5 cm,
44/1 pr. drš. 0,3 cm

Spatula bez proširenja, s udubljenjem na jednom kraju, fragmentirana.

1. – 4. st.

Gregl (1982: T. 9/7)

K103 Spatula, kost
SL. Inv. br. A-7287-3, Sisak
2 duž. 8 cm, šir. rec. 0,7 cm, pr. drš. 0,5 cm
44/2 Spatula bez proširenja s udubljenjem
88/6 na jednom kraju, fragmentirana.

1. – 4. st.

Neobjavljeno

K104 Spatula, kost
SL. Inv. br. A-7289-1, Sisak
2 duž. 7,1 cm, šir. rec. 0,5 cm,
44/3 pr. drš. 0,45 cm

Spatula bez proširenja, s udubljenjem na jednom kraju, fragmentirana.

1. – 4. st.

Neobjavljeno

K105 Spatula, kost
SL. Inv. br. A-7310, Sisak
2 duž. 12,9 cm, šir. rec. 0,45 cm,
44/4 pr. drš. 0,35 cm

Spatula bez proširenja, s udubljenjem na jednom kraju, fragmentirana.

1. – 4. st.

Gregl (1982: T. 9/6), Tesori nazionali (1991: br. 155/24)

K106 Spatula, kost
SL. Inv. br. A-7310-1, Sisak
2 duž. 8,5 cm, šir. rec. 0,6 cm, pr. drš. 0,5 cm
44/5 Spatula bez proširenja, s udubljenjem na jednom kraju, fragmentirana.

1. – 4. st.

Gregl (1982: T. 9/8), Tesori nazionali (1991: br. 155/25)

K107 Spatula, kost
SL. Inv. br. A-7310-2, Sisak
2 duž. 10,2 cm, šir. rec. 0,6 cm,
44/6 pr. drš. 0,6 cm
88/5 Spatula bez proširenja, s udubljenjem na jednom kraju, fragmentirana.

1. – 4. st.

Neobjavljeno

K108 Spatula, kost
SL. Inv. br. A-7310-4, Sisak
2 duž. 7,3 cm, šir. rec. 0,55 cm,
44/7 pr. drš. 0,45 cm
88/7 Spatula bez proširenja, s udubljenjem na jednom kraju, fragmentirana.

1. – 4. st.

Neobjavljeno

K109 Spatula, bronca
SL. Inv. br. A-4427-3, Sisak, dar M. Šipuš, 1909. g.
45/1 duž. 16,1 cm, šir. rec. 0,4 cm,
87/1 pr. drš. 0,15 cm

Fragmentirana spatula kojoj jedan kraj završava pločicom u obliku lancete, a drugi kraj nije sačuvan.

1. - 4. st.

Neobjavljeno.

K110 Spatula, srebro
Inv. br. A-4449-13, Sisak, dar Lj. Ivkanec, 1892. g.
SL. 45/2 87/2
duž. 11,7 cm, šir. rec. 0,35 cm, pr. drš. 0,15 cm

Fragmentirana spatula kojoj jedan kraj završava piramidalnim proširenjem, a na drugom kraju drške nalaze se prstenasti ukrasi, dok vrh nedostaje.

1. – 4. st.

Neobjavljeno

Ušne sonde

U zbirci se nalazi 363 sonda ovalnog recipijenta na jednoj i suženog vrha na drugoj strani. Prema ovalnom recipijentu možemo ih podijeliti na one sa ravnom (343) i konkavnom (20) pločicom recipijenta. Kod manjeg broja sondi pločica je postavljena u istoj ravnini s držačem, uglavnom su postavljene pod kutom u odnosu na držač. Tijelo držača najčešće je glatko, ali može biti i ukrašeno tordiranjem (30), vretenastim proširenjem (26), nizom prstenastih i poligonalnih zadebljanja te urezanih linija (33). Ukras je uglavnom smješten bliže pločici.

K111A Ušne sonde, neukrašene, grupno
Inv. br. A-4414-2-8, A-4416-1-2, A-4417-1-3, 8-25, 33-47, A-4418-3-13, 18-23, 38-57, 59-61, A-4435-79
duž. 3,7 – 18,7 cm, šir. rec. 0,2 – 0,7 cm, pr. drš. 0,1 – 0,4 cm, Sisak

1. – 4. st.

K111B Ušne sonde, ukrašene, grupno
SL. 1
Inv. br. A-4434-1-3, 5-6, 8-10, 13, 15-19, A-4438-1, 2, 4, A-4439-40, A-4435-10-16, 18
duž. 6 – 13,5 cm, šir. rec. 0,3 – 0,6 cm, pr. drš. 0,2 – 0,45 cm, Sisak

1. – 4. st.

K112 Ušna sonda, srebro
SL. 69/1
Inv. br. A-4417-32, Sisak, jaružanje Kupe 1912. g.
duž. 13,5 cm, šir. rec. 0,3 cm, pr. drš. 0,3cm

Fragmentirana sonda kojoj jedan kraj završava fragmentiranom ravnom pločicom, dok joj je drugi kraj zašiljen i nedostaje mu vrh, a drška je poligonalnog presjeka.

1. – 4. st.

Neobjavljeno

K113 Ušna sonda, srebro
SL. 69/2
Inv. br. A-4449-4, Sisak, dar Lj. Ivkanec, 1892. g.
duž. 16 cm, šir. rec. 0,4 cm, pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava fragmentiranom okruglom ravnom pločicom, dok joj je drugi kraj zašiljen. Sam vrh je svinut, a drška je kružnog presjeka.

1. – 4. st.

Neobjavljeno

K114 Ušna sonda, srebro
SL. 69/3
Inv. br. A-4563-2, Sisak
duž. 9 cm, šir. rec. 0,4 cm, pr. drš. 0,2 cm

Sonda kojoj jedan kraj završava okruglom ravnom pločicom, dok joj je drugi kraj zašiljen, a drška je kružnog presjeka.

1. – 4. st.

Neobjavljeno

K115 Ušna sonda, srebro
SL. 69/4 89/1
Inv. br. A-4563-3, Sisak
duž. 11,6 cm, šir. rec. 0,55 cm, pr. drš. 0,3 cm

Sonda kojoj jedan kraj završava okruglom ravnom pločicom, dok joj je drugi kraj zašiljen, a drška je kružnog presjeka. Analizu materijala PIXE metodom provela je dr. sc. I. Zamboni na Institutu Ruđer Bošković.

1. – 4. st.

Neobjavljeno

K116 Ušna sonda, srebro
SL. 69/5
Inv. br. A-4563-4, Sisak
duž. 10,1 cm, šir. rec. 0,3 cm, pr. drš. 0,33 cm

Fragmentirana sonda kojoj jedan kraj završava okruglom ravnom pločicom,

dok joj je drugi kraj zašiljen. Na prijelazu u pločicu, drška kružnog presjeka stanjuje se za 0,13 cm u dužini od 0,6 cm.

1. – 4. st.

Neobjavljeno

K117
SL. 69/6
Ušna sonda, srebro
Inv. br. A-4563-5, Sisak
duž. 9,5 cm, šir. rec. 0,5 cm, pr. drš. 0,3 cm

Sonda kojoj jedan kraj završava okruglom ravnom pločicom, dok joj je drugi kraj zašiljen, a drška je okruglog presjeka.

1. – 4. st.

Neobjavljeno

K118
SL. 69/7
Ušna sonda, srebro
Inv. br. A-4563-7, Sisak
duž. 11,2 cm, šir. rec. 0,4 cm,
pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava okruglom ravnom pločicom, dok joj je drugi kraj zašiljen, a drška je okruglog presjeka.

1. – 4. st.

Neobjavljeno

K119
SL. 69/8 89/2
Ušna sonda, srebro
Inv. br. A-4563-8, Sisak
duž. 12,3 cm, šir. rec. 0,5 cm,
pr. drš. 0,2 cm

Sonda kojoj jedan kraj završava okruglom ravnom pločicom, dok joj je drugi kraj zašiljen, a drška je okruglog presjeka. Analizu materijala PIXE metodom provela je dr. sc. I. Zamboni na Institutu Ruđer Bošković.

1. – 4. st.

Neobjavljeno

K120
SL. 69/9
Ušna sonda, srebro
Inv. br. A-19096, Sisak
duž. 8,55 cm, šir. rec. 0,3 cm,
pr. drš. 0,25 cm

Fragmentirana sonda kojoj jedan kraj završava oštećenom ravnom pločicom, dok joj je drugi kraj zašiljen sa svinutim vrhom, a drška je okruglog presjeka. Na prijelazu drške u pločasti recipijent nalazi se prstenasto proširenje.

1. – 4. st.

Neobjavljeno

K121
SL. 69/10
Ušna sonda, srebro
Inv. br. A-19097, Sisak
duž. 4,7 cm, šir. rec. 0,3 cm, pr. drš. 0,19 cm

Sonda kojoj jedan kraj završava okruglom ravnom pločicom, dok joj je drugi kraj zašiljen, a drška je kružnog presjeka.

1. – 4. st.

Neobjavljeno

K122
SL. 70/1
Ušna sonda, kost
Inv. br. A-7294-1, Sisak
duž. 13,2 cm, šir. rec. 0,5 cm,
pr. drš. 0,4 cm

Fragmentirana sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok joj je drugi kraj zašiljen. Vrh joj nedostaje, a drška je poligonalnog presjeka.

1. – 4. st.

Gregl (1982: T. 3/7)

K123
SL. 70/2
Ušna sonda, kost
Inv. br. A-7363-1, Sisak, jaružanje Kupe 1912. g.
duž. 11,95 cm, šir. rec. 0,4 cm,
pr. drš. 0,45 cm

Fragmentirana sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok joj je drugi kraj zašiljen, vrh joj nedostaje, a drška je kružnog presjeka.

1. – 4. st.

Gregl (1982: T. 3/8)

K124
SL. 70/3 89/4
Ušna sonda, kost
Inv. br. A-7363-3, Sisak, jaružanje Kupe 1912. g.
duž. 7,7 cm, šir. rec. 0,5 cm,
pr. drš. 0,45 cm

Fragmentirana sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok joj drugi, koji se sužava, nedostaje, a drška je kružnog presjeka.

1. – 4. st.

Neobjavljeno

K125
SL. 70/4
Ušna sonda, kost
Inv. br. A-7363-4, Sisak, jaružanje Kupe 1912. g.
duž. 4,1 cm, šir. rec. 0,4 cm, pr. drš. 0,3 cm

Fragmentirana sonda kojoj jedan kraj

završava ovalnom ravnom pločicom, dok joj drugi, koji se sužava, nedostaje, a drška je kružnog presjeka.

1. – 4. st.

Neobjavljeno

K126 Ušna sonda, bronca
SL. 68/1 89/3 Inv. br. A-19098, Sisak
duž. 7,4 cm, šir. rec. 0,35 cm, pr. drš. 0,2 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok joj je drugi zašiljen, a drška je poligonalnog presjeka. Od spoja pločice i drške u dužini 2 cm na dršci vidljiv plitak utor.

1. – 4. st.

Neobjavljeno

K127 Ušna sonda, bronca
SL. 68/2 Inv. br. A-4418-36, Sisak, jaružanje Kupe 1912. g.
duž. 8,95 cm, šir. rec. 0,4 cm, pr. drš. 0,2 cm

Fragmentirana sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok joj je drugi zašiljen, vrh joj nedostaje, a drška je poligonalnog presjeka.

1. – 4. st.

Neobjavljeno

K128 Ušna sonda, bronca
SL. 66/1 90/1 Inv. br. A-4410-13, Sisak – Kupa, dar M. Šipuš, 1909. g.
duž. 13,5 cm, šir. rec. 0,4 cm, pr. drš. 0,5 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka, s poligonalnim zadebljanjem bliže pločici.

1. – 4. st.

Neobjavljeno

K129 Ušna sonda, bronca
SL. 66/2 90/2 Inv. br. A-4420-6, Sisak, dar A. Bukvić, 1909. g.
duž. 10,3 cm, šir. rec. 0,55 cm, pr. drš. 0,35 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Drška je kružnog presjeka, pri kraju s pločicom je sužena, nakon čega slijedi ovalno zadebljanje.

1. – 4. st.

Neobjavljeno

K130 Ušna sonda, bronca
SL. 66/3 90/3 Inv. br. A-4435-10, Sisak
duž. 8,8 cm, šir. rec. 0,4 cm, pr. drš. 0,3 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka, zadebljan bliže pločici.

1. – 4. st.

Neobjavljeno

K131 Ušna sonda, bronca
SL. 66/4 90/4 Inv. br. A-4438-5, Sisak, dar Lj. Ivkanec, 1892. g.
duž. 12,4 cm, šir. rec. 0,4 cm, pr. drš. 0,45 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka, sa zadebljanjem koje je ukrašeno nizom ureza.

1. – 4. st.

Neobjavljeno

K132 Ušna sonda, bronca
SL. 66/5 Inv. br. A-4421-2, Sisak, jaružanje Kupe 1912. g.
duž. 10,5 cm, šir. rec. 0,6 cm, pr. drš. 0,35 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka nakon tri prstenasta ukrasa prelazi u poligalno zadebljali.

1. – 4. st.

Neobjavljeno

K133 Ušna sonda, bronca
SL. 66/6 71/1 90/6 Inv. br. A-4434-3, Sisak
duž. 13 cm, šir. rec. 0,4 cm, pr. drš. 0,45 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom dok je drugi kraj zašiljen. Držak je poligonalnog presjeka, sa zadebljanjem koje je ukrašeno nizom prstenastih ukrasa između kojih se nalaze poligonalno oblikovana zadebljanja.

1. – 4. st.

Neobjavljeno

K134 Ušna sonda, bronca
Inv. br. A-4441, Sisak, jaružanje Kupe 1912. g.
SL. 66/7 71/2
duž. 13,4 cm, šir. rec. 0,4 cm, pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava ovalnom žličastom pločicom okomitom na držač, dok je drugi kraj zašiljen. Držak je u gornjem dijelu četvrtasto zadebljan i ukrašen sitnim zarezima po rubovima te urezanim kružnicama u sredini.

1. – 4. st.

Gregl (1982: T 3/1, T 11/2), Tesori nazionali (1991: br. 155/6)

K135 Ušna sonda, bronca
Inv. br. A-4439-58, Sisak, jaružanje Kupe 1912. g.
SL. 65/1 69/1
duž. 9,2 cm, šir. rec. 0,45 cm, pr. drš. 0,2 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka, pri pločici tordiran.

1. – 4. st.

Gregl (1982: T. 2/6), Tesori nazionali (1991: br. 155/3)

K136 Ušna sonda, bronca
Inv. br. A-4438-3, Sisak, dar Lj. Ivkanec, 1892. g.
SL. 65/2 69/2
duž. 8,1 cm, šir. rec. 0,35 cm, pr. drš. 0,15 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, a drugi je oštećen. Držak je kružnog presjeka s nizom od pet prstenastih proširenja.

1. – 4. st.

Neobjavljeno

K137 Ušna sonda, bronca
Inv. br. A-4438-1, Sisak, dar Lj. Ivkanec, 1892. g.
SL. 65/3 69/3
duž. 15,3 cm, šir. rec. 0,5 cm, pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka ukrašen bliže pločici nizom tankih i međusobno razmaknutih prstenastih proširenja.

1. – 4. st.

Neobjavljeno

K138 Ušna sonda, bronca
Inv. br. A-4436-4, Sisak, dar A. Bukvić, 1909. g.
SL. 65/4 69/4
duž. 9,9 cm, šir. rec. 0,5 cm, pr. drš. 0,3 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, okomitom na držak, dok je drugi kraj zašiljen. Držak je kružnog presjeka, pri pločici je ukrašen dvostrukim prstenastim proširenjima i tordiranjem.

1. – 4. st.

Gregl (1982: T. 2/5)

K139 Ušna sonda, bronca
Inv. br. A-4434-20, Sisak
SL. 65/5 68 69/5
duž. 8,6 cm, šir. rec. 0,6 cm, pr. drš. 0,2 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka, prije pločice ukrašen urezima, ali samo sa stražnje strane.

1. – 4. st.

Gregl (1982: T. 2/1)

K140 Ušna sonda, bronca
Inv. br. A-4434-18, Sisak
SL. 65/6 69/6
duž. 5,8 cm, šir. rec. 0,5 cm, pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka, ukrašen nizom ureza. Pločica je postavljena gotovo okomito na držač.

1. – 4. st.

Neobjavljeno.

K141 Ušna sonda, bronca
Inv. br. A-4418-33, Sisak, jaružanje Kupe 1912. g.
SL. 65/7 69/7
duž. 8,1 cm, šir. rec. 0,3 cm, pr. drš. 0,15 cm

Sonda kojoj jedan kraj završava ovalnom ravnom pločicom, dok je drugi kraj zašiljen. Držak je kružnog presjeka te je ukrašen sitnim urezima raspoređenima u četiri skupine.

1. – 4. st.

Neobjavljeno

K142 Ušna sonda, bronca
Inv. br. A-4415-20, Sisak, jaružanje Kupe 1913. g.
SL. 67/1

duž. 13,6 cm, šir. rec. 0,4 cm,
pr. drš. 0,15 cm

Sonda kojoj jedan kraj završava ovalnom žličastom pločicom okomitom na držač, dok je drugi kraj zašiljen. Držak je okruglog presjeka, tordiran u gornjem djelu.

1. – 4. st.

Gregl (1982: T. 1/4)

K143
SL. 67/2
Ušna sonda, bronca
Inv. br. A-4415-23, Sisak, jaružanje Kupe 1913. g.
duž. 8 cm, šir. rec. 0,55 cm, pr. drš. 0,15 cm

Sonda kojoj jedan kraj završava ovalnom žličastom pločicom okomitom na držač, dok je drugi kraj zašiljen. Držak je okruglog presjeka, tordiran u gornjem djelu.

1. – 4. st.

Neobjavljeno

K144
SL. 67/3
Ušna sonda, bronca
Inv. br. A-19221, Sisak
duž. 16,5 cm, šir. rec. 0,4 cm,
pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava ovalnom žličastom pločicom okomitom na držač, dok je drugi kraj zašiljen. Držak je okruglog presjeka, u srednjem djelu je tordiran te tordirani dio završava s tri tanka prstenasta proširenja. Prema pločici je držak gladak, s jednom naznačenom profilacijom.

1. – 4. st.

Neobjavljeno.

K145
SL. 64/1 66 91/3
Ušna sonda, bronca
Inv. br. A-4435-1, Sisak
duž. 13,2 cm, šir. rec. 0,4 cm,
pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava ovalnom konkavnom pločicom okomitom na držač, dok je drugi kraj zašiljen. Držak je okruglog presjeka, tordiran u gornjem djelu.

1. – 4. st.

Tesori nazionali (1991: br. 155/4)

K146
SL. 64/3, 91/2
Ušna sonda, bronca
Inv. br. A-4415-13, Sisak, jaružanje Kupe 1913. g.
duž. 13,2 cm, šir. rec. 0,4 cm,
pr. drš. 0,2 cm

Sonda kojoj jedan kraj završava ovalnom konkavnom pločicom okomitom na držač, dok je drugi kraj zašiljen. Držak je okruglog presjeka, tordiran u gornjem djelu.

1. – 4. st.

Neobjavljeno

K147
SL. 64/2 91/1
Ušna sonda, bronca
Inv. br. A-4415-18, Sisak, jaružanje Kupe 1913. g.
duž. 13,8 cm, šir. rec. 0,4 cm,
pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava ovalnom konkavnom pločicom okomitom na držač, dok je drugi kraj zašiljen. Držak je okruglog presjeka, tordiran u gornjem djelu.

1. – 4. st.

Gregl (1982: T. 1/6)

K148
SL. 64/4 91/5
Ušna sonda, željezo
Inv. br. A-4439-3, Sisak, jaružanje Kupe 1912. g.
duž. 11,4 cm, šir. rec. 0,5 cm, pr. drš. 0,3 cm

Sonda kojoj jedan kraj završava pločicom u obliku školjke, dok je drugi kraj zašiljen. Drška je kružnog presjeka, ukrašena sa prstenastim i poligonalnim ukrasima.

1. – 4. st.

Neobjavljeno

K149
SL. 64/5 91/4
Ušna sonda, bronca
Inv. br. A-4414-1, Sisak, jaružanje Kupe 1912. g.
duž. 12,3 cm, šir. rec. 0,55 cm,
pr. drš. 0,35 cm

Sonda kojoj jedan kraj završava ovalnom konkavnom pločicom, dok je drugi kraj zašiljen. Drška je kružnog presjeka, ukrašena s dva ureza s prednje strane.

1. – 4. st.

Neobjavljeno

K150
SL. 64/6, 91/6
Ušna sonda, bronca
Inv. br. A-19112, Sisak
duž. 5,9 cm, šir. rec. 0,4 cm,

pr. drš. 0,25 cm

Sonda kojoj jedan kraj završava ovalnom konkavnom pločicom, dok je drugi kraj zašiljen. Drška je kružnog presjeka, oštećena pri zašiljenom kraju.

1. – 4. st.

Neobjavljeno

Dvostruke sonde

U zbirci se nalaze tri brončana primjerka, svaki od njih na oba kraja ima maslinasta proširenja.

K151 Dvostruka sonda, bronca
Inv. br. A-6051, Sisak
SL. 63/1 92/1 duž. 17,3 cm, šir. rec. 0,3 cm, pr. drš. 0,2 cm

Držač kružnog presjeka na oba kraja završava maslinastim proširenjem.

1. – 4. st.

Neobjavljeno

K152 Dvostruka sonda, bronca
Inv. br. A-4563-1, Sisak
SL. 63/2 92/2 duž. 18 cm, šir. rec. 0,3 cm, pr. drš. 0,2 cm

Držač kružnog presjeka na oba kraja završava maslinastim proširenjem, a jedno od maslinastih proširenja ima četvrtastu perforaciju na sredini.

1. – 4. st.

Neobjavljeno

K153 Dvostruka sonda, bronca
Inv. br. A-4401, Sisak, jaružanje Kupe 1912. g.
SL. 63/3 92/3 duž. 16,4 cm, šir. rec. 0,25 cm, pr. drš. 0,2 cm

Držač kružnog presjeka na oba kraja završava maslinastim proširenjem.

1. – 4. st.

Gregl (1982: T. 8/6)

Listolike sode

U Zbirci se nalazi 93 listolikih sondi. Držači sondi mogu biti neukrašeni, ovalnog ili poligonalnog presjeka, ili ukrašeni, kanelirani (11), tordirani (16), ljuskasti (2) te s ukrasom ureza u koji je umetnuta žica (5). Dio listolikih sodi, na držci bliže recipijentu, ima ukras u obliku niza prstenastih zadebljanja (33) ili pločastog rombičnog proširenja (14). Jedan primjerak unutar recipijenta ima pečat "CARANTI" (Inv. br. a-15881).

K154 Listolike sonde grupno
Inv. br. A-4410-2, 6, 8, 9, 11, 14, A-4439-5, 9, 25, 29, 43, Sisak
duž. 9,9–15 cm, duž. rec. 2–3,5 cm, šir. rec. 0,35–0,5 cm, pr. drš. 0,15–0,3 cm

1. – 4. st.

K155 Listolika sonda, bronca
Inv. br. A-4474-1, Sisak
SL. 47/1 51/1 93/2 duž. 12,2 cm, duž. rec. 1,5 cm, šir. rec. 0,6 cm, pr. drš. 0,2 cm

Držač kružnog presjeka na jednom kraju završava maslinastim proširenjem, a na drugom listolikim recipijentom. U donjoj četvrtini drške, prema recipijentu, nalazi se prstenasti ukras.

1. – 4. st.

Gregl (1982: T. 5/5)

K156 Listolika sonda, bronca
Inv. br. A-4439-28, Sisak, jaružanje Kupe 1912. g.
SL. 47/2 51/2 93/1 duž. 13 cm, duž. rec. 3,8 cm, šir. rec. 0,5 cm, pr. drš. 0,2 cm

Držač kružnog presjeka na jednom kraju završava završava maslinastim proširenjem, a na drugom listolikim recipijentom. Na prijelazu drške u izduženi recipijent, između dva kuglasta zadebljanja, niz je od četiri prstenasta ukrasa.

1. – 4. st.

Gregl (1982: T. 5/2)

K157 Listolika sonda, bronca
Inv. br. A-4439-11, Sisak, jaružanje Kupe
SL. 47/3 51/3 duž. 11,2 cm, duž. rec. 2,4 cm, šir. rec. 0,55 cm, pr. drš. 0,2 cm

Kanelirani držač na jednom kraju završava maslinastim proširenjem. Na trećini dužine, prema recipijentu, na kanelirenom držaču nalazi se bogati prstenasti ukras

nakon kojega držač završava listolikim recipijentom.

1. – 4. st.

Gregl (1982: T. 4/5)

K158 Listolika sonda, bronca
SL. 47/4, 51/4, 93/4 Inv. br. A-4439-6, Sisak, jaružanje Kupe 1912. g.
duž. 13,9 cm, duž. rec. 2,4 cm,
šir. rec. 0,65 cm, pr. drš. 0,15 cm

Kanelirani držač na jednom kraju završava maslinastim proširenjem.
Na trećini dužine, prema recipijentu, na kanelirenom držaču nalazi se prstenasti ukras nakon kojega držač postaje gladak i završava listolikim recipijentom.

1. – 4. st.

Gregl (1982: T. 5/1)

K159 Listolika sonda, bronca
SL. 47/5, 51/5, 93/3 Inv. br. A-4410-12, Sisak, jaružanje Kupe
duž. 11,1 cm, duž. rec. 1,7 cm,
šir. rec. 0,5 cm, pr. drš. 0,2 cm

Kanelirani držač na jednom kraju završava maslinastim proširenjem, a na drugom listolikim recipijentom koji je fragmentiran. Na spoju drške i recipijenta nalazi se pločasto proširenje s dva urezana zareza.

1. – 4. st.

Neobjavljeno

K160 Listolika sonda, bronca
SL. 47/6, 51/6 Inv. br. A-4410-7, Sisak, dar M. Šipuš, 1909. g.
duž. 11,2 cm, duž. rec. 1,5 cm,
šir. rec. 0,25 cm, pr. drš. 0,15 cm

Tordirani držač na jednom kraju završava maslinastim proširenjem, a na drugom listolikim recipijentom. Na prijelazu držača u recipijent nalazi se pločasto proširenje koje na stražnjoj strani ima dva polukružna ureza.

1. – 4. st.

Neobjavljeno

K161 Listolika sonda, bronca
SL. 47/7, 49, 51/7, 93/8 Inv. br. A-4410-5, Sisak, dar M. Šipuš, 1909. g.
duž. 14,5 cm, duž. rec. 3,8 cm,
šir. rec. 0,6 cm, pr. drš. 0,2 cm

Tordirani držač na jednom kraju završava maslinastim proširenjem, a na drugom listolikim recipijentom. Na prijelazu držača u recipijent nalazi se pločasto proširenje s dva polukružna ureza, a isti se oblik ureza nalazi i na stražnjoj strani pločice.

1. – 4. st.

Neobjavljeno

K162 Listolika sonda, bronca
SL. 47/8, 51/8 Inv. br. A-4472, Sisak, jaružanje Kupe
duž. 13,4 cm, duž. rec. 3,4 cm,
šir. rec. 0,5 cm, pr. drš. 0,15 cm

Tordirani držač na jednom kraju završava maslinastim proširenjem, a na drugom listolikim recipijentom. Na prijelazu držača u recipijent nalazi se pločasto proširenje s dva polukružna ureza, isti oblik ureza nalazi se i na stražnjoj strani pločice.

1. – 4. st.

Gregl (1982: T. 5/6),
Tesori nazionali (1991: br. 155/10)

K163 Listolika sonda, bronca
SL. 48, 93/7 Inv. br. A-4439-13, Sisak, dar A. Colussi
duž. 13,2 cm, duž. rec. 2,6 cm,
šir. rec. 0,65 cm, pr. drš. 0,3 cm

Držač je poligonalno oblikovan te na jednom kraju završava maslinastim proširenjem, a na drugom listolikim recipijentom. Na trećini dužine, prema recipijentu, na poligonalnom držaču nalazi se prstenasti ukras nakon kojega držač postaje kružnog presjeka te završava listolikim recipijentom.

1. – 4. st.

Gregl (1982: T. 5/3)

K164 Listolika sonda, bronca
SL. 52, 53, 93/6 Inv. br. A-4439, Sisak, dar A. Colussi
duž. 9,1 cm, duž. rec. 3,6 cm,
šir. rec. 0,5 cm, pr. drš. 0,15 cm

Ukrašeni držač ima urez koji ga spiralno obavija, u koji je bila umetnuta tanka žica, sačuvana samo u tragovima.
Na jednom kraju držač završava listolikim recipijentom, a na prijelazu držača u recipijent nalazi se prstenasti ukras.
Drugi kraj držača stanjuje se u oblik igle, ali mu nedostaje vrh.

1. – 4. st.

Gregl (1982: T. 5/4)

K165 Listolika sonda, bronca
SL. 54 55 Inv. br. A-15881, Sisak, jaružanje Kupe
duž. 12,9 cm, duž. rec. 3,3 cm,
šir. rec. 0,5 cm, pr. drš. 0,3 cm

93/9 Držač kružnog presjeka koji na jednom kraju završava maslinastim proširenjem, a na drugom listolikim recipijentom. Unutar recipijenta nalazi se pečat "CARANTI".

1. – 4. st.

Gregl (1983a),
Tesori nazionali (1991: br. 145)

Skalpeli

U Zbirci se nalazi 6 držača skalpela koje, prema obliku drške, možemo podijeliti na dva osnovna oblika, s kratkom (5) i dugom drškom (1).

K166 Držač skalpela, bronca
SL. 94/1 104/1 Inv. br. A-6475-1, Sisak – Kupa,
dar A. Colussi
duž. 7,8 cm, šir. 1 cm

Kratki brončani držač skalpela četvrtastog oblika koji na jednoj strani ima listoliko proširenje, a na drugoj utor za umetanje oštrice. Tupo listoliko proširenje ima brid po sredini. Kraj skalpela s utorom za umetanje oštrice zavinuto je oblikovan, a u utoru su željezni tragovi.

1. – 4. st.

Neobjavljeno

K167 Držač skalpela, bronca
SL. 94/2 104/2 Inv. br. A-6475-2, Sisak – Kupa,
dar A. Colussi
duž. 7,38 cm, šir. 1,1 cm

Kratki brončani držač skalpela četvrtastog oblika koji na jednoj strani ima listoliko proširenje, a na drugoj utor za umetanje oštrice. Tupo listoliko proširenje ima brid po sredini. Kraj skalpela s utorom za umetanje oštrice, zavinuto je oblikovan, a u utoru su željezni tragovi.

1. – 4. st.

Neobjavljeno

K168 Držač skalpela, bronca
SL. 94/3 104/3 Inv. br. A-6475-3, Sisak – Kupa,
dar A. Colussi
duž. 6,6 cm, šir. 0,5 cm

Kratki brončani držač skalpela četvrtastog oblika koji na jednoj strani ima listoliko proširenje, a na drugoj utor za umetanje oštrice. Tupo listoliko proširenje ima brid po sredini. Kraj skalpela s utorom za umetanje oštrice, zavinuto je oblikovan, a u utoru su željezni tragovi.

1. – 4. st.

Neobjavljeno

K169 Držač skalpela, bronca
SL. 94/4 104/4 Inv. br. A-6475-4, Sisak – Kupa,
dar A. Colussi
duž. 5 cm, šir. 1 cm

Kratki brončani držač skalpela četvrtastog oblika koji na jednoj strani ima listoliko proširenja, a na drugoj utor za umetanje oštrice. Tupo listoliko proširenje ima brid po sredini te je oštećeno. Kraj skalpela s utorom za umetanje oštrice, zavinuto je oblikovan, a u utoru su željezni tragovi.

1. – 4. st.

Neobjavljeno

K170 Držač skalpela, bronca
SL. 94/5 104/5 Inv. br. A-6475-5, Sisak – Kupa,
dar A. Colussi
duž. 8,1 cm, šir. 0,7 cm

125/5 Kratki brončani držač skalpela četvrtastog oblika koji na obje strane ima utore.
Na jednoj je strani u utor bila umetnuta oštrica skalpela, dok je na drugoj umetnut tupi linearni nastavak.
Oba su utora zavinuto oblikovana.

1. – 4. st.

Neobjavljeno

K171 Držač skalpela, bronca
SL. 94/6 104/6 Inv. br. A-6207, Sisak, jaružanje Kupe
1912. g.
duž. 9,1 cm, šir. 0,6 cm

125/6 Dugi brončani držač skalpela ukrašen nizom prstenastih zadebljanja. Na jednoj strani završava listolikim proširenjem koje je po sredini perforirano.

Na drugoj se strani nalazi otvor za prihvat oštrice skalpela.

1. – 4. st.

Neobjavljeno

Tupe kuke

U Zbirci se nalazi šest tupih kuka, sve su brončane, a četiri su ukrašene.

K172 — SL. 95/1
Tupa kuka, bronca
Inv. br. A-6132-1, Sisak, jaružanje Kupe 1912. g.
duž. 14,2 cm, pr. 0,3 cm

Tupa brončana kuka sa zaobljenim savinutim završetkom na jednom, i ravnim, zašiljenim završetkom na drugom kraju. Savijeni kraj ukrašen je urezanim mrežastim ukrasom.

1. – 4. st.

Neobjavljeno

K173 — SL. 95/2
Tupa kuka, bronca
Inv. br. A-6132-2, Sisak, jaružanje Kupe 1912. g.
duž. 12,2 cm, pr. 0,3 cm

Tupa brončana kuka sa zaobljenim savinutim završetkom na jednom i ravnim, zašiljenim završetkom na drugom kraju. Savijeni kraj ukrašen je urezanim mrežastim ukrasom.

1. – 4. st.

Neobjavljeno

K174 — SL. 95/3
Tupa kuka, bronca
Inv. br. A-6134, Sisak, otkup L. Hermann, 1898. g.
duž. 12 cm, pr. 0,25 cm

Tupa brončana kuka sa zaobljenim savinutim završetkom na jednom i ravnim, zašiljenim završetkom na drugom kraju. Savijeni kraj ukrašen je urezanim mrežastim ukrasom.

1. – 4. st.

Neobjavljeno

K175 — SL. 95/4
Tupa kuka, bronca
Inv. br. A-4568, Sisak, jaružanje Kupe 1912. g.
duž. 11,4 cm, pr. 0,3 cm

Tupa brončana kuka sa zaobljenim savinutim završetkom na jednom i ravnim, zašiljenim završetkom na drugom kraju. Savijeni kraj ukrašen je urezanim mrežastim ukrasom.

1. – 4. st.

Neobjavljeno

Pincete

U Zbirci se nalazi 26 metalnih pinceta koje prema oblikovanju krakova možemo podijeliti na one s ravnim krakovima (8) i one kojima su krakovi pri dnu zavinuti (12). U posebnu grupu možemo svrstati pincete s koljenasto svinutim krakovima, najčešće u gornjem dijelu ili sredini krakova (4). Prema oblikovanju hvatne površine razlikujemo one s plosnatim i one sa šiljatim krajem, a samo jedan primjerak ima izrazito proširen hvatni dio (inv. br. 4462-2). Sve su pincete izrađene iz jednog komada metala, osim jednog željeznog primjerka (inv. br. A-4004-1).

K176 — SL. 56/1 — 97/1
Pinceta, željezo
Inv. br. A-4004-3, Sisak
duž. 7,4 cm, šir. 0,4 – 0,55 cm

Željezna pinceta s krakovima koji se pri dnu savijaju.

1. – 4. st.

Gregl (1982, T. 7/2)

K177 — SL. 56/2 — 97/2
Pinceta, bronca
Inv. br. A-4487, Sisak
duž. 9,9 cm, šir. 0,5 cm

Brončana pinceta s krakovima koji se pri dnu savijaju.

1. – 4. st.

Neobjavljeno

K178 — SL. 56/3 — 97/3
Pinceta, bronca
Inv. br. A-4463-1, Sisak
duž. 9,4 cm, šir. 0,1 – 0,4 cm

Brončana pinceta s ravnim, zašiljenim krakovima.

1. – 4. st.

Neobjavljeno

K179 Pinceta, željezo
Inv. br. A-4004-1, Sisak
SL. 56/4 duž. 10,3 cm, šir. 0,1 – 0,7 cm
57 97/4 Željezna pinceta s ravnim krakovima koji su pri vrhu zašiljeni. Pinceta je izrađena od više dijelova, krakovi su spojeni na osnovu dvjema zakovicama.

1. – 4. st.

Gregl (1982, T. 7/1)

K180 Pinceta, bronca
Inv. br. A-4489, Sisak
SL. 56/5 duž. 6,3 cm, šir. 0,3 cm
97/5 Brončana pinceta kojoj su krakovi koljenasto savijeni pri vrhu, a pri dnu završavaju ravno.

1. – 4. st.

Gregl (1982, T. 7/8)

K181 Pinceta, bronca
Inv. br. A-4466, Sisak
SL. 56/6 duž. 4,2 cm, šir. 0,4 – 0,6 cm
97/6 Brončana pinceta sa savijenim krakovima ravnih završetaka.

1. – 4. st.

Neobjavljeno

Žličice

U Zbirci se nalaze 54 metalne žličice koje se mogu podijeliti na one s okruglim, listolikim i četvrtastim recipijentom. Žličice su uglavnom izrađene od kombinacije metala, a najčešće se radi o brončanim žličicama s tragovima kositrenja (10) ili kositrenim recipijentima sa željeznim drškama (9). Sačuvani su i fragmentirani elementi kositrenih recipijenata (14) na kojima su vidljivi tragovi željeznog spoja drški, te željezne drške (7). U Zbirci je i po jedan primjerak, brončane, kositrene i srebrne žličice. Na unutrašnjoj se strani recipijenta vrlo često nalazi ukras u obliku urezane kružnice pri rubu ili točke u sredini recipijenta, a na stražnjoj je strani čest ukras jedna do dvije urezane linije sa svake strane mjesta spoja recipijenta s drškom. Izuzetak je žličica s četvrtastim recipijentom koja ima ukras kako na recipijentu tako i na drški (inv. br. A-4406).
U fundusu AMZ-a nalazi se i 13 koštanih žličica kružnog recipijenta s ukrasom urezane kružnice ili točke unutar recipijenta.

K182 Žličice, grupno
Inv. br. A-4401, A-4402-1, 3-5, A-4404, A-4405-1, A-4452-2, 15, 16, 18, 20, 28, A-4457-2, Sisak
duž. 4,4 – 11,5 cm, pr. rec. 2,4 – 2,8 cm, pr. drš. 0,3 – 0,4 cm

1. – 4. st.

K183 Žlica, bronca
Inv. br. A-4501, Sisak, jaružanje Kupe 1909. g.
SL. 74/1 98/3 duž. 9,6 cm, šir. rec. 2,3 cm

Fragmentirana brončana žlica listolikog recipijenta. Držak je na strani recipijenta poligonalnog presjeka i ukrašen kaneliranjem. Drugi kraj drške nedostaje.

1. – 4. st.

Gregl (1982, T. 6/2)

K184 Žlica, srebro
Inv. br. A-19074, Sisak
SL. 74/2 duž. 14,5 cm, šir. rec. 2,2 cm
98/4 Srebrna žlica s listolikim recipijentom. Sa stražnje strane je recipijent ukrašen urezanim crtama duž spoja s držačem koji je gladak i pri kraju zašiljen. Analizu materijala PIXE metodom provela je dr. sc. I. Zamboni na Institutu Ruđer Bošković.

1. – 4. st.

Neobjavljeno

K185 Žlica, bronca
Inv. br. A-4402-2, Sisak, jaružanje Kupe 1909. g.
SL. 74/3 98/5 duž. 10,7 cm, pr. rec. 2 cm

Brončana žlica okruglog recipijenta. Držak je poligonalnog presjeka s prstenastim ukrasom i zašiljen na kraju. S donje strane recipijent žličice je ukrašen urezanim crtama duž spoja s držačem.

1. – 4. st.

Gregl (1982, T. 6/2)

K186 Žlica, bronca
Inv. br. A-5894-1, Sisak, dar Lj. Ivkanec
SL. duž. 11,5 cm, pr. rec. 1,6 cm
74/4
98/2 Brončana žlica okruglog recipijenta. Na recipijentu vidljivi tragovi kositrenja. Držak je gladak i zašiljen na kraju. S donje je strane recipijent žličice ukrašen urezivanjem.

1. – 4. st.

Gregl (1982, T. 6/7)

K187 Žlica, željezo/kositar
Inv. br. A-4452-28, Sisak, jaružanje Kupe
SL. 1912. g.
74/5 duž. 13,6 cm, pr. rec. 2,5 cm
79
98/6 Žlica s kružnim recipijentom izrađenim od kositra. S unutrašnje strane recipijenta ukras kružnice uz rub i kružno ispupčenje u sredini. Držak je gladak, zašiljen na kraju, izrađen od željeza.

1. – 4. st.

Gregl (1982, T. 6/6)

K188 Žlica, olovo/željezo
Inv. br. A-4406, Sisak, jaružanje Kupe,
SL. 1912. g.
74/6 duž. 10,5 cm, duž. rec. 1,4 cm,
98/1 šir. rec. 1,2 cm

Žličica s olovnim pravokutnim recipijentom s uvučenim dužim stranama. Držak je željezan, gladak i kružnog je presjeka te mu nedostaje vrh. Prije recipijenta je zadebljao, četvrtasto je oblikovan i ukrašen nizom sitnim urezima.

1. – 4. st.

Gregl (1982, T. 6/4)

K189 Žlica, kost
Inv. br. A-7254-1, Sisak– Kupa
SL. duž. 7,9 cm, pr. rec. 1,3 cm
4
74/7 Koštana žlica kružnog recipijenta.
98/7 Recipijent je ukrašen koncentričnim prstenovima, u sredini ima kružno udubljenje i asimetrično je postavljen s obzirom na držak. Držak je gladak i jednostavan te mu nedostaje vrh.

1. – 4. st.

Neobjavljeno

K190 Žlica, kost
Inv. br. A-7254-2, Sisak – Kupa
SL. duž. 9,2 cm, pr. rec. 1,4 cm
74/8
98/8 Koštana žlica kružnog recipijenta. Recipijent je ukrašen koncentričnim prstenovima i u sredini ima kružno udubljenje. Držak je gladak i jednostavan.

1. – 4. st.

Neobjavljeno

Tuljci za instrumente

U Zbirci se nalazi 7 primjeraka cilindričnih tuljaka za instrumente, od toga su 2 kutije cijele (tuljac i poklopac), a preostalih pet je fragmentirano te je pronađen samo tuljac (1) ili samo poklopci (4). Izrađene su od metala (6) i kosti (1). Izdvaja se jedan poklopac s pečatom "OFSO".

K191 Cilindrični tuljac, kost
Inv. br. A-7245, Sisak, jaružanje Kupe
SL. 1912. g.
99 duž. 10 cm, pr. 1 – 1,4 cm

Duguljasti i uski cilindrični tuljac načinjen od kosti. Na sredini se nalazi navoj za poklopac. Na jednom kraju je oštećen.

1. – 4. st.

Neobjavljeno

K192 Cilindrični poklopac, bronca
Inv. br. A-8132, Sisak, jaružanje Kupe
SL. 1913. g.
100A vis. 3,7 cm, pr. 3,5 cm

Cilindrični poklopac kutijice za medicinske instrumente ukrašen s tri trake po dvije urezane linije. Trokutasti metalni element za zatvaranje kutijice spojen je s tri zakovice od kojih je samo jedna sačuvana. Na gornjem je dijelu poklopca unutar pravokutnika duž. 0,65 cm, šir. 0,2 cm pečat "OFSO".

1. – 4. st.

Neobjavljeno

K193 Cilindrični poklopac, bronca
Inv. br. A-6072, Sisak, jaružanje Kupe
SL. 1913. g.
100/1

duž. 3,5 cm, pr. 2,5 cm

Oštećen cilindrični poklopac ukrašen s trakom od četiri urezane linije. Sačuvan je dio sistema za zatvaranje u oblliku ukrašenog trokuta spojenog za poklopac pomoću dvije zakovice od kojih je samo jedna sačuvana. Na vrhu poklopca, u sredini, je ukras koncentrične kružnice.

1. – 4. st.

Neobjavljeno

K194 Cilindrični poklopac, bronca
SL. 100/2 Inv. br. A-6002, Sisak, jaružanje Kupe 1912. g.
duž. 3,5 cm, pr. 2,1 cm

Oštećen cilindrični poklopac. Vrh poklopca je ulupljen. Na vrhu poklopca vidljiv je dio ukrasa u obliku koncentričnih prstenova.

1. – 4. st.

Neobjavljeno

K195 Cilindrični poklopac, bronca
SL. 100/3 Inv. br. A-6245, Sisak, jaružanje Kupe 1912. g.
duž. 5,2 cm, pr. 1,4 cm

Fragmentirani cilindrični poklopac kutijice za medicinske instrumente, nedostaje mu gornji dio. Uz gornji i donji rub nalaze se po četiri otvora za zakovice, a od ukupno osam, sačuvane su četiri zakovice. Sačuvana su i dva veća polukružna otvora uz gornji i donji rub poklopca, jedan iznad drugog.

1. – 4. st.

Neobjavljeno

K196 Tuljac za medicinske instrumente, bronca
SL. 84/1 Inv. br. A-6453, Sisak – Kupa
duž. 9,7 cm, pr. 1,6 cm

Cilidrična kutija za medicinske instrumente sastavljena od tuljca i poklopca. Tuljac je ukrašen s četiri pojasaod po dvije urezane linije. Poklopac na vrhu ima urezan središnji krug. Kutijicu nije moguće otvoriti.

1. – 4. st.

Neobjavljeno

K197 Tuljac za medicinske instrumente, bronca
SL. 84/2 Inv. br. A-6692, Sisak, dar A. Bukvić, 1909. g.
duž. 11,4 cm, pr. 1,3 cm

Cilindrična kutijica za medicinske instrumente, neukrašena i grubo izrađena s vidljivim tragovima preklopa svinutog lima. Na poklopcu je sačuvan dio sistema za zatvaranje u obliku petlje, dok je na tijelu posude od sistema za zatvaranje ostao samo fragmentirani trag lema u obliku trake. Na vrhu poklopca nalazi se središnji krug. Kutijicu je moguće otvoriti.

1. – 4. st.

Neobjavljeno

K198 Vodovodna cijev, keramika
SL. 57/2 Inv. br. A-19222, Sisak?
duž. 40,8 cm, pr. 6 – 8,9 cm

Ulomak cilindrične vodovodne cijevi koja se prema jednom kraju sužava. Na 2,5 cm od užeg kraja, cijev je proširena jednim okomitim prstenastim rebrom, koje je omogućavalo međusobno povezivanje cijevi.

1. – 4. st.

Neobjavljeno

K199 Vodovodna cijev, keramika
SL. 57/1 Inv. br. A-19223, Sisak?
duž. 34,6 cm, pr. 8,3 – 11,7 cm

Ulomak cilindrične vodovodne cijevi koja se prema jednom kraju sužava. Na 4,5 cm od užeg kraja, cijev je proširena jednim okomitim prstenastim rebrom, nakon kojeg slijedi navoj za međusobno spajanje cijevi.

1. – 4. st.

Neobjavljeno

K200 Vodovodna cijev, olovo
SL. 59/1 Inv. br. A-18584, Sisak – Kupa
duž. 28,3 cm, šir. 6,8 cm

Ulomak olovne vodovodne cijevi nepravilnog kružnog presjeka. Cijev je izrađena od olovne ploče koja je kružno savijena, a krajevi su spojeni.

1. – 4. st.

Neobjavljeno

K201 Vodovodna cijev, olovo
Inv. br. A-18583, Sisak, dar Dierich, 1924. g.
SL. 59/2
duž. 29,2 cm, šir. 14,8 cm

Ulomak olovne vodovodne cijevi nepravilnog kružnog presjeka. Cijev je izrađena od olovne ploče koja je kružno savijena, a krajevi su spojeni. Na sebi ima radionički pečat u visokom reljefu: "COL. SIS TELSER F". Na samom spoju cijevu rezana je oznaka "CXVD CCC".

1. – 4. st.

Neobjavljeno

OSTEOLOŠKI MATERIJAL

K202 Lubanja s tragovima trepanacije, Ludbreg
Grob 1, muškarac, 51-55 godina u trenutku smrti (kasna antika).
Osteološka zbirka Antropološkog centra Hrvatske akademije znanosti i umjetnosti u Zagrebu.

vis. 20,7 cm

Trepanacija. Na lijevoj strani lubanje prisutan je ovalni defekt, promjera 43×31 mm. Rubovi su stanjeni, glatki i remodelirani bez ikakvih znakova infekcije, odnosno upalnog procesa što sugerira da je zahvat bio uspješan.

Novak et al. (2013)

K203 Kralježnica s tragovima tuberkuloze, Stari Jankovci
Grob 37, žena, 31-35 godina u trenutku smrti (rani srednji vijek).
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vis. 20 cm

Tuberkuloza kralježnice. Patološke promjene nalaze se u slabinskom i prsnom dijelu kralježnice. Tijelo prvog slabinskog kralješka je gotovo potpuno uništeno što je dovelo do prolapsa kralješka i spajanjem sa susjednim dvanaestim prsnim i prvim slabinskim kralješkom. Treći slabinski kralježak pokazuje blagi kompenzacijski rast što upućuje na to da su patološke promjene nastale u ranijoj dobi, prije završetka rasta. Dodatne promjene prisutne su u prsnom dijelu kralježnice gdje su tijela šest kralježaka zahvaćena i spojena u oštrokutnu grbu.

Šlaus (2006)

K204 Lubanja s depresijskom frakturom, Velim – Velištak
Grob 34, muškarac, 31-35 godina u trenutku smrti (rani srednji vijek).
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vis. 22,7 cm

Antemortalna depresijska fraktura na lijevoj strani lubanje. Fraktura se nalazi na posteriornoj strani i prelati preko šava koji spaja čeonu i tjemenu kost. Defekt je dimenzija 30×35 mm i utisnut u odnosu prema okolnoj kosti za 8 mm. Rubovi frakture su zaobljeni i remodelirani. Fraktura je dobro zacijelila te nema nikakvih tragova upalnog procesa.

Šlaus (2006)

K205 Goljenična kost s tragovima osteomijelitisa, Vinkovci – Makart
Grob 56, muškarac, 31-35 godina u trenutku smrti (kasna antika).
Gradski muzej Vinkovci Osteološka zbirka Antropološkog centra Hrvatske akademije znanosti i umjetnosti u Zagrebu.

duž. 37,5 cm

Na čitavoj dijafizi lijeve goljenične kosti prisutan je jaki osteomijelitis; čitava dijafiza je zadebljana što je praćeno zaraslim periostitisom i pojavom pet kloaka od kojih se u najgornjoj vide ostaci sekvestra – najvjerojatniji uzrok osteomijelitisa lijeve goljenične kosti je ozljeda gležnja jer je lijeva skočna kost srasla s goljeničnom kosti.

Neobjavljeno

CATALOGUE ENTRIES

K1
FIG. 6
Statue of Apollo Sol, marble
Temporary storage AMZ, VTks-2, Varaždinske Toplice, 2011 excavations
h. 170 cm

Partially preserved marble statue of Apollo Sol with a radiant crown on his head. Parts of the arms, lower legs, and feet are missing. He is leaning on a tripod with a coiled snake.

Beginning of 3RD century CE.

Kušan Špalj (2015: cat. 71)

K2
FIG. 7
Relief of Asclepius and Hygiea, marble
Inv. no. KS-103, Zemun, 1989 excavations
w. 22.3 cm, h. 21.3 cm, t. 3.2 cm

Marble votive plate with relief of Asclepius, Hygiea and Telesphoros and an inscription. A stella is in the middle of the image, and Asclepius to the left. He holds a snake-entwined staff. Hygiea stands to the right, holding a patera, with a snake coiled around her left arm. Telesphoros, wearing a cape with a hood covering his head, is in the middle in front of the stella. The inscription ASCLEPIO ET HYGIE is above the image, and IVL. MAGNVS DVI bellow it.

1ST - 2ND century CE

Brunšmid (1905: no. 103), Dautova-Ruševljan (1983: T. 20/4), CIL III S. 15137

K3
FIG. 9
Head of Asclepius, marble
Inv. no. KS-15, Dalmatia, Solin?
w. 1.14 cm, h. 6 cm

Marble head of Asclepius, part of a small statue. Asclepius has locks in his beard and hair, wearing a spiral band around his head. His nose and some curls are damaged.

2ND - 3RD century CE

Brunšmid (1904: no. 15), Reinach (1924: fig. 6), Tadin (1979: T. 16/26 a,b)

K4
FIG. 8
Head of goddess Diana, marble
Inv. no. KS-933, Senj, 1949 excavations
w. 10.5 cm, h. 17.3 cm

The marble head of the goddess Diana belonged to a statue of smaller dimensions. The delicate modeling of the face stands out; strands of hair are treated like corrugated channels and arranged in a characteristic style. The face of the goddess is damaged, the nose is missing.

Beginning of the 3RD century CE

Degmedžić (1951), Cambi (2013)

K5
FIG. 13
Statue of Hercules, bronze
Inv. no. A-4630, Sisak, 1912 dredging of the Kupa river
h. 30.6 cm, h. base 8.1 cm

Standing statue of naked Hercules mounted on a square base with decorative legs. He has a moustache and beard. He is holding a club (the end is preserved) in his right hand, and the three apples of Hesperides in his left.

2ND century CE

Brunšmid (1914: cat. 60), Tesori nazionali (1991: 134)

K6
FIG. 14
Statue of Telesphoros, terracotta
Inv. no. A-8212, Sisak
w. 2.4 cm, h. 7 cm

Terracotta figurine of Telesphoros wearing a hooded cape, standing on a semi-circular base. The back of the figurine is hollow.

Beginning of the 3RD century CE

Unpublished.

K7
FIG. 115
Ring shaped like a snake, bronze
Inv. no. A-4931, Sisak
d. 1.9 cm, t. max. 0.3 cm

Open ring with one end shaped like a snake's head. The other end is a spiral. The head of the snake is realistically formed with pronounced eyes and small slits. Reticular ornamentation extends from the head towards the body.

1ST - 3RD century CE

Unpublished.

K8
FIG. 73
Intaglio gem, sardonyx
Inv. no. A-16061, Kostolac, 1913 purchase from S. Trojanović
w. 0.96 cm, h. 1.2 cm, t. 0.47 cm

Oval sardonyx gem depicting Hercules resting on a club, with a lion's skin hanging from his left hand.

1ST - 4TH century CE

Kaić (2013: cat. 87)

K9
FIG. 19

Intaglio gem, carnelian
Inv. no. A-16126, Kostolac, 1913
purchase from S. Trojanović
w. 1 cm, h. 1.3 cm, t. 0.35 cm

Dark red oval carnelian gem depicting Asclepius and Salus. In his left hand, Asclepius holds a snake-entwined staff. Salus stands to his left and, in her right hand, she holds a patera feeding a snake coiled around her left arm and shoulder.

1st - 4th century CE

Kaić (2013: cat. 46)

K10
FIG. 10

Intaglio gem, green jade
Inv. no. A-16137, Sisak-Kupa, 1913
purchase N. Šumenovac
w. 0.8 cm, h. 1.1 cm, t. 0.3 cm

Oval gem shows centaur Chiron beardless profile to the left, with a fur cape that flutters behind him, sitting on his hind legs, with a raised front left foot. His left arm rests on the shoulder of the young Achilles naked body standing frontally next to him, holding a lyre in his right hand.

1st - 4th century CE

Kaić (2013: cat. 95)

K11
FIG. 12

Intaglio gem, carnelian
Inv. no. A-16271, Sisak-Kupa
w. 0.9 cm, h. 1.2 cm, t. 0.33 cm

Oval orange carnelian gem depicting Salus. The goddess is holding a patera in her left hand. A snake is coiled around her right arm and shoulder.

1st - 4th century CE

Kaić (2013: cat. 172)

K12
FIG. 37

Intaglio gem, carnelian
Inv. no. A-16240, Resnik
w. 1.14 cm, h. 1.2 cm, t. 0.23 cm

Circular orange carnelian gem depicting Minerva wearing a peplos and sitting on a throne. To her left is a shield and an arched snake above it.

1st - 4th century CE

Maixner (1881: no. 25),
Kaić (2013: cat. 136)

K13
FIG. 21

Coin, Emperor Domitian, silver
Inv. no. C26313
l. 1.81 x 1.95 cm, w. 3.48 g, axis: 5 h

Silver denarius of Emperor Domitian. On the obverse there is a wreathed bust of Domitian in right profile with the inscription running along the edge CAESAR AVG F DOMITIANVS COS VII. The reverse shows Salus in right profile leaning on a pole and feeding a snake from patera with the inscription running along the edge of PRINCEPS IVVENTVTIS.

80 CE, Domitian (in the reign of Tito), mint Rome.

Type RIC II² 97th

K14
FIG. 34

Coin, Emperor Galienus, bronze
Inv. no. C28633, Komin (hoard)
l. 1,85 x 1,84 cm, w. 2.50 g, axis: 12 h

Bronze antoninianus of Emperor Galienus. The averse shows the bust of Galienus in armor with radiate crown in right profile with the inscription running along the edge GALLIENVS AVG. The reverse shows Salus standing on the left, the right hand holding a scepter, feeding a snake that rises from the altar, from patera in her left hand. The inscription SALVS AVG with the letter P in right field.

267-268 CE, mint Siscia

Type: RIC 581; Göbl 1462b.

K15
FIG. 18

Coin, Emperor Commodus, bronze.
Inv. no. A-6848, Thyatira, Lydia
l. 4.36 x 4.24 cm, w. 39.29 g

The bronze coin of Emperor Commodus minted in Lydia under the magistrate Artemidoros II Florou. The obverse shows wreathed bust of Commodus in right profile with armor and paludamentum with inscription AVT KAI Λ AIΛ AVP KOMMOΔOS. The reverse shows Asclepius standing in frontal position, head turned to the right, holding a nipple rod around which a snake is wrapped; on the right side stands naked Apollo (Tyrimnaios), frontally, head turned to the left, wearing a radial crown, holding a laurel branch and double-sided ax. The inscription ΕΠΙ ΣΤΡΑ ΑΡΤΕΜΙΔΩΡΟV Β ΦΛΩΡΟV, in heading: ΘVΑΤΕΙΡΗΝΩΝ.

c. 191- 192 CE

Type: RPC4 (online), 1553 (provisional number), SNG Munich 636

K16 — FIG. 76

Mortarium, stone
Inv. no. A-18894, Sisak
h. 5.3 cm, d. bottom 11 cm

Crudely produced mortarium made of grey stone, partially damaged. Three handles are preserved on the exterior side.

1ST - 4TH century CE

Unpublished.

K17 — FIG. 77

Pestle, marble
Inv. no. A-13503, Hrtkovci, Serbia
l. 6.9 cm, d. 2.5 cm

Finely made marble pestle, shaped like the letter "L", with a polished surface.

1ST - 4TH century CE

Gregl (1983: T. 2/4)

K18 — FIG. 101/1

Ointment pallet, diabase
Inv. no. A-19210, Sisak
l. 8.8 cm, w. 5.1 cm

Rectangular ointment pallet made of dark grey diabase, with sloping lateral sides. Wide surface has a notch so it is easier to use.

1ST - 4TH century CE

Unpublished.

K19 — FIG. 101/2

Ointment pallet, diabase
Inv. no. A-8059, Sisak
l. 8.2 cm, w. 5.1 cm

Rectangular ointment pallet made of dark grey diabase, with sloping lateral sides.

1ST - 4TH century CE

Unpublished.

K20 — FIG. 101/3

Ointment pallet, agate
Inv. no. A-19217, site unknown
l. 7.5 cm, w. 4.3 cm

Rectangular ointment pallet with sloping lateral sides, finely made.

1ST - 4TH century CE

Unpublished.

K21 — FIG. 103, 103A

Steelyard, bronze/iron
Inv. no. A-9874, Stara Pazova, Serbia
l. 18.7 cm

A Roman steelyard. The beam has a polygonal cross-section. It was made of bronze and, on three sides, it has visible markings for measuring. Two bronze chains and one hook are preserved. One full bronze chain is preserved with a hook. Part of the second chain is preserved, without a hook. The iron hook for holding the steelyard is also preserved.

1ST - 4TH century CE

Unpublished.

K22 — FIG. 102, 102A

Scale beam, bronze
Inv. no. A-4443, Sisak, 1912 dredging of the Kupa river
l. 9 cm

Small steelyard beam. The beam has a rhomboid cross-section and a bulb on one end. The other end has a notch with one thin hook. On two sides, the beam has measuring marks.

1ST - 4TH century CE

Unpublished.

K23 — FIG. 81/1

Scale beam, bronze
Inv. no. A-4443-1, Sisak, 1912 dredging of the Kupa river
l. 15.8 cm

Equal arm scale beam with a loop on both ends and in the middle.

1ST - 4TH century CE

Unpublished.

K24 — FIG. 81/4

Scale pan, bronze
Inv. no. A-6318-1, Sisak, 1913 dredging of the Kupa river
d. 6 cm

Circular scale pan made of thin bronze sheet and perforated in four places near the outer edge. On the interior side, in the middle, it is decorated with concentric grooves.

1ST - 4TH century CE

Unpublished.

K25 — FIG. 81/2

Scale pan, bronze
Inv. no. A-6318-2, Sisak, 1913 dredging of the Kupa river
d. 6 cm

Circular scale pan made of thin bronze sheet and perforated in four places near the outer edge.

1st - 4th century CE

Unpublished.

K26 — FIG. 81/3, 82
Disc-shaped scale weight, 6 pieces, bronze
Inv. no. A-6716, Sisak
1. d. 1.4 cm, weight 11.39 g
2. d. 1.4 cm, weight 3.83 g
3. d. 1.3 cm, weight 2.92 g
4. d. 1.1 cm, weight 2.52 g
5. d. 1.3 cm, weight 1.84 g
6. d. 1.1 cm, weight 2.32 g

Disc-shaped scale weights of various sizes. One has measuring marks (inv. no. A-6716-6). One side is decorated with a line of dots and the letter "N" in high relief, while the other side is marked by the letter "H".

1st - 4th century CE

Unpublished.

K27 — FIG. 83
Disc-shaped scale weight, bronze
Inv. no. A-6402, Sisak, 1925
purchase by M. Hrnjak
d. 1.2 cm, weight 5.2 g

Disc-shaped scale weight with a carved sequence of irregular lines.

1st - 4th century CE

Unpublished.

K28 — FIG. 78/1
Colander, lead
Inv. no. A-5233-3, Sisak-Kupa, 1913
purchase
d. 8.8 cm

Circular lead colander with perforated circular openings of various size and irregular arrangement.

1st - 4th century CE

Unpublished.

K29 — FIG. 78/2
Colander, lead
Inv. no. A-5233-2, Sisak-Kupa, 1913
purchase
d. 4.4 cm

Circular lead colander with perforated circular openings of various size in a linear arrangement.

1st - 4th century CE

Unpublished.

K30 — FIG. 16/2
Bowl, ceramics
Inv. no. A-GV-672, South Italy
h. 3.8 cm, rim d. 5.6 cm, d. bottom 3.4 cm

Cylindrical bowl on a high foot with a thick rim. Made of red clay with a black slip finish.

4th - 3rd century BCE

Unpublished.

K31 — FIG. 16/1
Bowl, ceramics
Inv. no. A-GV-674, South Italy
h. 4.8 cm, rim d. 6.5 cm, d. bottom 3.9 cm

Cylindrical bowl on a high foot with a thick rim. Made from red clay with a black slip finish.

4th - 3rd century BCE

Unpublished.

K32 — FIG. 16/4
Alabastron, ceramics
Inv. no. A-GV-819, South Italy
h. 10.6 cm, belly d. 4.2 cm,
d. bottom 2.6 cm

Pear-shaped alabastron with a flat standing surface and a pronounced, thickened lip. It was made from yellow-grey clay.

4th - 3rd century BCE

Unpublished.

K33 — FIG. 16/3
Alabastron, ceramics
Inv. no. A-GV-823, South Italy
h. 8 cm, belly d. 4.8 cm, d. bottom 2.4 cm

Pear-shaped alabastron with a flat standing surface and wide neck. It was made of red clay with traces of red glaze on the surface.

4th - 3rd century BCE

Unpublished.

K34 — FIG. 16/7
Guttus, ceramics
Inv. no. A-GV-864, South Italy
h. 6 cm, belly d. 9.7cm, d. bottom 6.5 cm

Round guttus with an angled spout and a ring-shaped ending. Body of the guttus is fluted with a black slip finish. The guttus has one high ring-shaped handle.

4th - 3rd century BCE

Unpublished.

K35 — FIG. 16/8
Guttus, ceramics
Inv. no. A-GV-868, South Italy

h. 5.3 cm, belly d. 7.3 cm, d. bottom 4.9 cm

Round guttus with a short spout. The middle opening is raised and pronounced. Body of the guttus is fluted diagonally and has a black slip finish. The guttus had one damaged ring-shaped handle.

4TH - 3RD century BCE

Unpublished.

K36 Vessel with a lid/pyxis, ceramics
Inv. no. A-GV-1065, South Italy
FIG. 16/5 h. 7.2 cm, bottom d. 3.8 cm
17 Short vessel with a lid, a pyxis with column-like handles and red painted figures on a black surface.

4TH - 3RD century BCE

Unpublished.

K37 Jug, ceramics
Inv. no. A-GV-1175, South Italy
FIG. 16/6 h. 9 cm, rim d. 4.4 cm, d. bottom 4.2 cm
20 Round jug with a horizontal rim with shallow flutes. Sign is incised under the band-shaped handle. It was made of red clay with a gloss slip finish.

4TH - 3RD century BCE

Unpublished.

K38 Jug, terra sigillata
Inv. no. A-8149, Sisak
FIG. 33/4 h. 16.2 cm, d. bottom 4.2 cm

Conspectus Kc type jug with an angled twisted handle. The shape is reminiscent of a lekytos. Part of the north Italian sigillata group.

2ND half of the 1ST century CE.

Makjanić (1995, T. 66/185)

K39 Bowl, terra sigillata
Inv. no. A-7857-1, Sisak
FIG. 33/3 h. 3.1 cm, d. bottom 3.6 cm

Conical Conspectus 43 type bowl. The edge has a barbotine decoration. Part of the Tardo-Padana group of Italian sigillata.

Middle of the 1ST century CE – middle of the 2ND century CE.

Vikić-Belančić (1958: fig. 8), Makjanić (1995, T. 65/169)

K40 Bowl, terra sigillata
Inv. no. A-8147, Sisak
FIG. 33/1 h. 4.2 cm, rim d. 8.5 cm

Conical Conspectus 34 type bowl. The edge is decorated with barbotine rosettes. A workshop stamp "in planta pedis ALY" (master Alyptus) is on the bottom of the bowl. Arretine ware.

Middle of the 1ST century CE.

Vikić-Belančić (1963: fig. 3), Makjanić (1995, T. 61/74)

K41 Bowl, terra sigillata
Inv. no. A-8150, Sisak
FIG. 33/2 h. 8.3 cm, rim d. 14.5 cm, d. bottom 5.9 cm

Conical Dragendorff 33 type bowl on a short, round foot. Part of a workshop stamp "_IANI" is visible on the bottom. There is an incised graffito on the outer side of the bottom. Part of the south Italian sigillata group.

Middle of the 2ND century CE - beginning of the 3RD century CE.

Unpublished.

K42 Unguentarium, glass
Inv. no. A-7668, Sisak, 1926 purchase from Tomac
FIG. 22/4 h. 9.2 cm, rim d. 1.9 cm

Unguentarium with a tubular body and a long cylindrical neck. It was made of light green glass.

1ST century CE

Unpublished.

K43 Unguentarium, glass
Inv. no. A-7670, Sisak, 1909 donation by A. Colussi
FIG. 22/6 h. 7.1 cm, rim d. 1.6 cm, belly d. 2.2 cm

Unguentarium with a conical body and short, cylindrical neck. It was made of light green glass.

1ST - 3RD century CE

Unpublished.

K44 Unguentarium, glass
Inv. no. A-11024, Bakar
FIG. 22/11 h. 9.4 cm, rim d. 3.6 cm, d. bottom 2 cm

Unguentarium with a square body with folds and indentations. The bottom is

narrow and indented in the middle. It was made of thin white glass.

First half of 3rd century CE.

Gregl, Lazar (2008, T. 21/2)

K45 Unguentarium, glass
Inv. no. A-11045, Bakar, 1882 excavations
FIG. 22/10 h. 10.3 cm, rim d. 2.5 cm, d. bottom 2 cm

Unguentarium with a conical body and a long, cylindrical neck profiled near the body.

2nd - 3rd century CE

Ljubić (1882: no. 33),
Gregl, Lazar (2008: no. 48)

K46 Unguentarium, glass
Inv. no. A-11047, Bakar, 1882 excavations
FIG. 22/7 h. 11.5 cm, rim d. 2.4 cm, d. bottom 3 cm

Unguentarium with a conical body and a long neck profiled near the body.

Second half of 1st century - first half of 3rd century CE.

Ljubić (1882: no. 33),
Gregl, Lazar (2008: no. 49)

K47 Unguentarium, glass
Inv. no. A-11082, Bakar
FIG. 22/2 h. 3.6 cm, rim d. 1.2 cm, bottom d. 1 cm
24/2 Unguentarium with a pear-shaped body and a short neck, made of dark blue glass.

1st century CE

Gregl, Lazar (2008: T. 20/5)

K48 Unguentarium, glass
Inv. no. A-11087, Bakar
FIG. 22/1 h. 8.4 cm, rim d. 2.4 cm, d. bottom 2 cm
24/1 Unguentarium with a pear-shaped body and a short neck, made from dark blue opaque glass.

End of 1st century BCE - beginning of 1st century CE

Damevski (1976: T. 3/1),
Gregl, Lazar (2008: T. 20/7)

K49 Unguentarium, glass
Inv. no. A-11328a, Bakar, 1882 excavations
FIG. 22/9 h. 11 cm, rim d. 2.2 cm, d. bottom 2 cm

Unguentarium with a tubular body, long and narrow neck, and a flat bottom.

2nd - 3rd century CE

Gregl, Lazar (2008: T. 17/5)

K50 Unguentarium, glass
Inv. no. A-11331, Bakar, 1882 excavations
FIG. 22/8 h. 8.4 cm, rim d. 2.2 cm, d. bottom 2 cm

Unguentarium with a small triangular body, straight bottom, and long neck.

Second half of 1st century CE - 2nd century CE

Ljubić (1882: no. 36),
Gregl, Lazar (2008: T. 17/8)

K51 Unguentarium, glass
Inv. no. A-15784, Topusko
FIG. 22/3 h. 8.7cm, belly d. 5.8 cm, rim d. 4.9 cm
29 Unguentarium with a flattened low body and a cylindrical neck.

2nd century CE

Unpublished.

K52 Unguentarium, glass
Inv. no. A-17773, unknown site, Pavletić Collection
FIG. 22/5 h. 14.7 cm, rim d. 3 cm, d. bottom 5 cm

Unguentarium with a triangular body and a long, narrow neck, made of light green glass.

1st - 2nd century CE

Na tragovima vremena (2003: no. 115c)

K53 Unguentarium, glass
Inv. no. A-17769, unknown site, 2001 purchase
FIG. 22/12 h. 7.1 cm, rim d. 1.2 cm, d. bottom 1.8 cm

Unguentarium with an oval body made of brown-yellow glass.

1st century CE

Na tragovima vremena (2003: no. 107a)

K54 Guttus, glass
Inv. no. A-11739, Stenjevec
FIG. 23 h 5.2 cm, rim d. 3.5 cm, d. max 8.1 cm

Bird-shaped glass guttus with a round body, narrow extended funnel, cylindrical neck, and straight rim, turned inwards. The bottom is slightly recessed. It was made of light green glass.

1st - 2nd century CE

Unpublished.

K55 Small urn, glass
Inv. no. A-11295, Budva, 1941 purchase
h. 5.7 cm, rim d. 4.1 cm, bottom w. 3.4 cm
FIG. 32/1
Small rectangular urn with an outwards protruding rim and indented bottom. Lateral sides have concave indentations. It was made of light green glass.
1ST century CE
Unpublished.

K56 Small urn, glass
Inv. no. A-11298-1, Budva, 1940 purchase
h. 5.7 cm, rim d. 5.9 cm, d. bottom 3.6 cm
FIG. 32/2
Small round urn with an outwards protruding rim and indented bottom. It was made of light green glass.
1ST century CE
Unpublished.

K57 Bottle, glass
Inv. no. A-17768, unknown site, 2001 purchase
h. 7.43 cm, rim d. 2 cm, bottom d. 2.8 cm
FIG. 31/1
Round bottle with a narrow neck. The neck widens slightly towards a straight rim. An imprint of a metal holder is visible on the bottom. It was made of green-purple glass.
3RD - 4TH century CE
Na tragovima vremena (2003: no. 124)

K58 Bottle, glass
Inv. no. A-17781, unknown site, 2001 purchase
h. 15.2 cm, rim d. 4 cm, d. bottom 4 cm
FIG. 31/2
Conical bottle with a pronounced transition from belly to the neck, ending in a funnel-shaped spout. It was made of light green glass.
1ST century CE
Na tragovima vremena (2003: no. 104)

K59 Bootle, glass
Inv. no. A-17782, unknown site, 2001 purchase
h. 13.8 cm, rim d. 3 cm, d. bottom 4 cm
FIG. 31/3
Unguentarium with a conical body and a narrow neck, made of light green glass.
1ST century CE

K60 Jug, glass
Inv. no. A-17766, unknown site, 2001 purchase
h. 6.8 cm, rim d. 2.2 cm, d. bottom 1.1 cm
FIG. 30
Small jug with an oval body, a relief ornament, and one handle, made of purple glass.
1ST century CE
Na tragovima vremena (2003: no. 102)

K61 Glass rods, glass
Inv. no. A-19216, Sisak
l. 7.8 - 16.2 cm, d. 0.31 - 1 cm
FIG. 75
Twisted glass rods made of white, yellow-green, and turquoise glass. All glass rods are fragmented.
1ST - 2ND century CE
Unpublished.

K62 Cylindrical box, lead
Inv. no. A-18597, Sisak, 1912 dredging of the Kupa river
h. 3.2 cm, w. bottom 3.5 cm
FIG. 72
Small cylindrical box, deformed and damaged. The rim is straight. The bottom has a dotted border and a relief inscription in three rows "L/SABIN/ROMA".
1ST - 4TH century CE
Unpublished.

K63 Cylindrical box with a lid, lead
Inv. no. A-9843a (box), A-9843b (lid), Split
h. 5.3 cm, d. bottom 6.3 (box)
h. 3.4 cm, d. 7.3 cm (lid)
FIG. 80/4
Cylindrical box with a lid.
Both the box and the lid are damaged.
1ST - 4TH century CE
Unpublished.

K64 Cylindrical box, lead
Inv. no. A-5227, Sisak
h. 3 cm, rim d. 3.3 cm, d. bottom 3.1 cm
FIG. 80/3
Cylindrical lead box with a flat bottom and straight rim, well made.
1ST - 4TH century CE
Unpublished.

K65 Box lid, lead
Inv. no. A-8235, Sisak
FIG. 80/2

h. 1.1 cm, rim d. 3.7 cm

Cylindrical lead box lid with a damaged rim. The lid is slightly convex in the middle.

1st - 4th century CE

Unpublished.

K66 Box lid, lead
Inv. no. A-8033, Sisak
FIG. 80/5 h. 1.5 cm, d. 6.5 cm

Cylindrical, flat lead lid with a straight rim. The exterior side is decorated with four carved concentric circles.

1st - 4th century CE

Unpublished.

K67 Cylindrical box, silver
Inv. no. A-19220, unknown site
FIG. 80/1 h. 4.9 cm, rim d. 3.9 cm, bottom d. 4.1 cm

Fragmented cylindrical box made out of a silver sheet. The exterior edge of the bottom and sides are decorated with three concentric ribs. The bottom is curved inward in the middle.

1st - 4th century CE

Unpublished.

K68 Cylindrical box, bone
Inv. no. A-9987, Bakar, 1881
FIG. 80/7 h. 5 cm, rim d. 3 cm, bottom d. 3.5 cm

Cylindrical bone box with a flat bottom and straight rim. The sides have concentric rings.

1st - 4th century CE

Unpublished.

K69 Box lid, bone
Inv. no. A-19218, Solin
FIG. 80/8 d. 3 cm, t. 0.4 cm

Circular bone box lid, reminiscent of a token. It has small cylindrical button in the middle and is decorated with concentric incission.

1st - 4th century CE

Unpublished.

K70 Cylindrical box, horn
Inv. no. A-9811, Solin, purchase
FIG. 80/6 h. 6 cm, d. 2.8 cm

Cylindrical box with damaged bottom and sides. The box has a relief ornament showing two flying Erotes facing each other. Based on the ornamental elements (Erotes - young boys with rounded faces), it can be dated in the period between the reigns of emperors Trajan and Hadrian.

1st half and middle of 2nd century CE

Unpublished.

K71 Box, amber
Inv. no. A-19219, Solin
FIG. 112 l. 8.5 cm, w. 4 cm
113 Oblong amber box with unevenly shaped
114 ends. One shorter side is flat, while the other is rounded. Long lateral sides are also rounded. The flat short side is decorated with an engraved disc, and the rounder short side has an double coil relief ornament. The upper side of the box is flat with an oblong opening. The rounded bottom has a pronounced rib serving as a standing surface. The box has a lid that slides between two lateral grooves. It is fragmented and some parts have been reconstructed.

1st - 4th century CE

Unpublished.

K72 Knife, iron/bronze
Inv. no. A-2170, Sisak
FIG. 27/2 l. 12.9 cm, blade l. 7.9 cm, blade w. 1.4 cm

Iron knife with a bent bronze handle. The handle ends in a rectangular profiled button.

1st - 4th century CE

Unpublished.

K73 Knife, iron
Inv. no. A-2295, Sisak, 1912 dredging of the Kupa river
FIG. 27/3 l. 10 cm, l. blade 7.9 cm, blade w. 1 cm

Iron knife with a straight blade and a ring at the end of the handle.

1st - 4th century CE

Unpublished.

K74 Knife, iron
Inv. no. A-2297, Sisak
FIG. 27/1

l. 15.4 cm, l. blade 9 cm, blade w. 1.7 cm

Iron knife with a straight blade and decorated handle. The handle ends in semicircular, shifted end.

1st - 4th century CE

Unpublished.

K75 Knife, iron
Inv. no. A-6745, Sisak, dredging of the Kupa river
FIG. 27/4
l. 14.3 cm, blade l. 10 cm, blade w. 1.7 cm

Bent iron knife, sickle-shaped, with a straight blade. Its handle is missing.

1st - 4th century CE

Unpublished.

K76 Shears, iron
Inv. no. A-2703, Sisak, 1912 dredging of the Kupa river
FIG. 28/1
l. 11.6 cm, blade l. 6.8 cm, blade w. 1.4 cm

Iron shears made from one piece of metal with a U-shaped handle.

1st - 4th century CE

Unpublished.

K77 Shears, iron
Inv. no. A-3168, Sisak, 1912 dredging of the Kupa river
FIG. 28/2
l. 4.6 cm, blade l. 2.2 cm, blade w. 0.7 cm

Iron shears made from one piece of metal with a U-shaped handle.

1st - 4th century CE

Unpublished.

K78 Razor, iron
Inv. no. A-2751-1, Sisak-Kupa, 1909 donation by A. Bukvić
FIG. 25/2
l. 11.8 cm, blade w. 1.6 cm

Straight iron razor with an upturned handle ending with a small round thickening.

1st - 4th century CE

Unpublished.

K79 Razor, iron
Inv. no. A-2751-2, Sisak- Kupa, 1909 donation by A. Bukvić
FIG. 25/3
l. 12.5 cm, blade w. 1.8 cm

Iron razor with a curved blade with a downward turned handle ending in a loop.

1st - 4th century CE

Unpublished.

K80 Razor, iron
Inv. no. A-2298, Sisak-Kupa, 1907 donation by A. Colussi
FIG. 25/1
l. 6.7 cm, blade l. 1.6 cm

Small iron razor.
Handle is upturned and ends in a spiral.

1st - 4th century CE

Unpublished.

K81 Saw fragment, bronze
Inv. no. A-3095, Sisak
FIG. 26
l. 7.5 cm, max w. 4.1 cm

Fragment of a serrated saw with a rounded edge. Preserved end has a small circular perforation near the short edge.

1st - 4th century CE

Unpublished.

K82 Strigil, iron
Inv. no. A-5881, Sisak
FIG. 62
l. 7.5 cm, max w. 4.1 cm

Iron strigil with a simple handle.

1st - 4th century CE

Unpublished.

K83 Needles, bronze, 10 pieces
Inv. no. A-4528, Sisak
FIG. 35
l. 3.7 - 10.5 cm, eye l. 0.1 - 0.7 cm

Bronze needles of various sizes, with round and polygonal cross-sections and rectangular eyes.

1st - 4th century CE

Unpublished.

THE COLLECTION OF ROMAN MEDICAL AND PHARMACEUTICAL INSTRUMENTS FROM SISAK

Double needles

The Collection contains 4 bronze double needles different in form. The Greek and Roman Collection at the AMZ also holds one double needle made of bone.

K84 Double needle, bone
Inv. no. A-7315, Sisak, donation from the "Siscia" Society
FIG. 36/1 85/1 l. 12.5 cm, w. 0.55 cm
Square handle narrows to sharp points with circle cross-section on both ends.
1ST - 4TH century CE
Unpublished.

K85 Double needle, bronze
Inv. no. A-4451-5, Sisak, 1912 dredging of the Kupa river
FIG. 36/2 85/2 l. 14.2 cm, handle d. 3.5 cm
Handle with a circle cross-section that narrows to sharp points on both ends.
1ST - 4TH century CE
Gregl (1982: T. 8/5)

K86 Double needle, bronze
Inv. no. A-4451-3, Sisak, 1912 dredging of the Kupa river
FIG. 36/3 85/3 l. 12.7 cm, handle d. 0.35 cm
Handle with a circle cross-section, on one side ends in a long pointed needle, and on the other a short needle.
1ST - 4TH century CE
Unpublished.

K87 Double needle, bronze
Inv. no. A-6389-1, Sisak
FIG. 36/4 85/4 l. 10 cm, handle d. 0.3 cm
Twisted handle is decorated on both ends with ring moulding and ends in needles on both sides.
1ST - 4TH century CE
Gregl (1982: T. 8/4)

K88 Double needle, bronze
Inv. no. A-4486, Sisak
FIG. 36/5 85/5 l. 9.5 cm, handle w. 0.4 cm
Square handle that had a needle with a circlular cross-section on one end, and a needle with a triangle cross-section on the other.
1ST - 4TH century CE
Unpublished.

Spatula

The Collection contains 61 bone and metal spatulas. Based on their recipients, there are spatulas with flat, slightly concave or lancet-shaped recipients. Flat recipients can be rectanglular (5), leaf-shaped (7), leaf-shaped with a rhomboid extension (6), triangular (13) and lancet-shaped (2). Slightly concave recipients are triangular (18). Regardless of the recipient, all spatulas have an olivary or a pointed opposite end. Spatulas made of bone have a special design, ending with a notch instead of a flat recipient on one side (10). Four completely preserved bone spatulas have pointed endings on the other side. Spatula handles usually have smooth, circular or polygonal in cross-sections. Several spatulas have fluted (2) handles or handles with spindle-shaped enlargements (2). A few spatulas have ring-and-disc moulding or rhomboid extensions on the transition between the neck and the recipient.

K89 Spatulas, group
Inv. no. A-4407-2-5, A-4412-1, A-4437-4, 6, 9-11, Sisak
l. 10.8 - 22.7 cm, recipient w. 1 - 1.7 cm, handle d. 0.2 - 0.4 cm
1ST - 4TH century CE

K90 Spatula, bronze
Inv. no. A-4483, Sisak
FIG. 38 39 87/3 l. 13.4 cm, recipient l. 5.5 cm, recipient w. 0.8 cm, handle d. 0.2 cm
Fragmented spatula, one side has a rectangular recipient with rounded

corners, the handle is smooth and with a cross-section circular.

1st - 4th century CE

Unpublished.

K91
FIG. 40/1 88/1
Spatula, bronze
Inv. no. A-4482-1, Sisak
l. 16.1 cm, recipient w. 0.8 cm, handle d. 0.3 cm

Smooth handle with a round cross-section has a leaf-shaped recipient on one side, and an olivary end on the other.

1st - 4th century CE

Unpublished.

K92
FIG. 40/2 88/3
Spatula, bronze
Inv. no. A-4480, Sisak, 1912
l. 14.6 cm, recipient w. 0.5 cm, handle d. 0.15 cm

Smooth handle with a round cross-section has a leaf-shaped recipient on one side, and an olivary end on the other. Ring-and-disc moulding decoration between the handle and the recipient.

1st - 4th century CE

Unpublished.

K93
FIG. 40/3 88/2
Spatula, bronze
Inv. no. A-4409, Sisak, 1912 dredging of the Kupa river
l. 14.3 cm, recipient w. 0.55 cm, handle d. 0.25 cm

Fluted handle has a leaf-shaped recipient on one side and an olivary end on the other. Ring-and-disc moulding decoration between the handle and the recipient.

1st - 4th century CE

Unpublished.

K94
FIG. 41/2
Spatula, bronze
Inv. no. A-4436, Sisak, 1909
donation by A. Bukvić
l. 13.8 cm, recipient w. 1.3 cm, handle d. 0.3 cm

Fluted handle has a leaf-shaped recipient with a rhomboid extension on one side, and the other side is decorated with ring-and-disc moulding with a missing end.

1st - 4th century CE

Gregl (1982: T. 9/2), Tesori nazionali (1991: no. 155/30)

K95
FIG. 41/1 88/4
Spatula, bronze
Inv. no. A-4436-1, Sisak, 1909
purchase by A. Bukvić
l. 10.6 cm, recipient w. 1.4 cm, handle d. 0.35 cm

Fragmented polygonal handle with a leaf-shaped recipient with a rhomboid extension.

1st - 4th century CE

Unpublished.

K96
FIG. 43/1 86/1
Spatula, bronze
Inv. no. A-4407-6, Sisak, 1912 dredging of the Kupa river
l. 24.6 cm, recipient w. 1 cm, handle d. 0.4 cm

Spatula with a triangular recipient and a pointed end with a round cross-section.

1st - 4th century CE

Tesori nazionali (1991: no. 155/33)

K97
FIG. 43/2 86/2
Spatula, bronze
Inv. no. A-4407-7, Sisak, 1912 dredging of the Kupa river
l. 19.2 cm, recipient w. 0.9 cm, handle d. 0.25 cm

Spatula with a triangular recipient and a pointed end with a round cross-section.

1st - 4th century CE

Tesori nazionali (1991: no. 155/31)

K98
FIG. 42/4 86/5
Spatula, bronze
Inv. no. A-4437-13, Sisak, 1909
purchase by A. Bukvić
l. 16.7 cm, recipient w. 1.6 cm, handle d. 0.4 cm

Spatula with a round handle, a concave triangular recipient, and a pointed end. Triangular recipient is perforated in the middle.

1st - 4th century CE

Gregl (1982: T. 9/4)

K99
FIG. 42/3 86/3
Spatula, bronze
Inv. no. A-4437-14, Sisak, 1909
donation by A. Bukvić
l. 19.8 cm, recipient w. 1.5 cm, handle d. 0.25 cm

Spatula with a round handle, a concave triangular recipient, and a pointed end with a damaged tip.

1st - 4th century CE

Unpublished.

K100 Spatula, bronze
FIG. Inv. no. A-4437-15, Sisak, 1909
42/2 donation by A. Bukvić
86/4 l. 18.4 cm, recipient w. 1.9 cm, handle d. 0.35 cm

Spatula with a round handle, a concave triangular recipient, narrowing towards the end which is missing.

1st - 4th century CE

Unpublished.

K101 Spatula, bone
FIG. Inv. no. A-7347, Sisak,
42/1 purchase from H. Lederer
86/6 l. 7.8 cm, recipient w. 1.2 cm, handle d. 0.55 cm

Spatula with a round handle, a concave triangular recipient, narrowing towards the end which is missing.

1st - 4th century CE

Gregl (1982: T. 9/5)

K102 Spatula, bone
FIG. Inv. no. A-7287-2, Sisak
2 l. 12.3 cm, recipient w. 0.5 cm,
44/1 handle d. 0.3 cm

Fragmented spatula with a notch on one end.

1st - 4th century CE

Gregl (1982: T. 9/7)

K103 Spatula, bone
FIG. Inv. no. A-7287-3, Sisak
2 l. 8 cm, recipient w. 0.7 cm,
44/2 handle d. 0.5 cm
88/6 Fragmented spatula with a notch on one end.

1st - 4th century CE

Unpublished.

K104 Spatula, bone
FIG. Inv. no. A-7289-1, Sisak
2 l. 7.1 cm, recipient w. 0.5 cm,
44/3 handle d. 0.45 cm

Fragmented spatula with a notch on one end.

1st - 4th century CE

Unpublished.

K105 Spatula, bone
FIG. Inv. no. A-7310, Sisak
2 l. 12.9 cm, recipient w. 0.45 cm,
44/4 handle d. 0.35 cm

Fragmented spatula with a notch on one end.

1st - 4th century CE

Gregl (1982: T. 9/6),
Tesori nazionali (1991: no. 155/24)

K106 Spatula, bone
FIG. Inv. no. A-7310-1, Sisak
2 l. 8.5 cm, recipient w. 0.6 cm,
44/5 handle d. 0.5 cm

Fragmented spatula with a notch on one end.

1st - 4th century CE

Gregl (1982: T. 9/8),
Tesori nazionali (1991: no. 155/25)

K107 Spatula, bone
FIG. Inv. no. A-7310-2, Sisak
2 l. 10.2 cm, recipient w. 0.6 cm,
44/6 handle d. 0.6 cm
88/5 Fragmented spatula with a notch on one end.

1st - 4th century CE

Unpublished.

K108 Spatula, bone
FIG. Inv. no. A-7310-4, Sisak
2 l. 7.3 cm, recipient w. 0.55 cm,
44/7 handle d. 0.45 cm
88/7 Fragmented spatula with a notch on one end.

1st - 4th century CE

Unpublished.

K109 Spatula, bronze
FIG. Inv. no. A-4427-3, Sisak, 1909
45/1 donation by M. Šipuš
87/1 l. 16.1 cm, recipient w. 0.4 cm, handle d. 0.15 cm

Spatula with a lancet-shaped end on one

side, the other end is missing.

1st - 4th century CE

Unpublished.

K110 Spatula, silver
Inv. no. A-4449-13, Sisak, 1892 donation by Lj. Ivkanec
FIG. 45/2 87/2
l. 11.7 cm, recipient w. 0.35 cm, handle d. 0.15 cm

Spatula with a pyramidally shaped end on one side, the other end is missing. The handle is decorated with ring mouldings.

1st - 4th century CE

Unpublished.

Ear probes

The Collection contains 363 ear probes with oval recipients and pointed ends. Based on the oval recipient, ear probes can have a flat (343) or concave (20) recipients. The recipient is usually angled, but several ear probes have a recipient flush with the handle. Handles are mostly smooth, but can also be twisted (30), have spindle-shaped enlargements (26), and decorated with ring-and-disc moulding and incised lines (33). The ornament is usually near the recipient.

K111A Ear probes, undecorated group
Inv. no. A-4414-2-8, A-4416-1-2, A-4417-1-3, 8-25, 33-47, A-4418-3-13, 18-23, 38-57, 59-61, A-4435-79, Sisak
l. 3.7 - 18.7 cm, recipient w. 0.2 - 0.7 cm, handle d. 0.1-0.4 cm

1st - 4th century CE

K111B Ear probes, decorated group
Inv. no. A-4434-1-3, 5-6, 8-10, 13, 15-19, A-4438-1, 2, 4, A-4439-40, A-4435-10-16, 18, Sisak
FIG. 1
l. 6 - 13.5 cm, recipient w. 0.3 - 0.6 cm, handle d. 0.2-0.45 cm

1st - 4th century CE

K112 Ear probe, silver
Inv. no. A-4417-32, Sisak, 1912 dredging of the Kupa river
FIG. 69/1
l. 13.5 cm, recipient w. 0.3 cm, handle d. 0.3cm

Fragmented ear probe with a polygonal handle that has a fragmented flat recipient, and a pointed end with a missing tip.

1st - 4th century CE

Unpublished.

K113 Ear probe, silver
Inv. no. A-4449-4, Sisak, 1892 donation by Lj. Ivkanec
FIG. 69/2
l. 16 cm, recipient w. 0.4 cm, handle d. 0.25cm

Ear probe with a round handle that has a fragmented flat recipient, and a curved pointed end.

1st - 4th century CE

Unpublished.

K114 Ear probe, silver
Inv. no. A-4563-2, Sisak
FIG. 69/3
l. 9 cm, recipient w. 0.4 cm, handle d. 0.2cm

Ear probe with a round handle that has a round flat recipient, and a pointed ending.

1st - 4th century CE

Unpublished.

K115 Ear probe, silver
Inv. no. A-4563-3, Sisak
FIG. 69/4 89/1
l. 11.6 cm, recipient w. 0.55 cm, handle d. 0.3cm

Ear probe with a round handle that has a round flat recipient, and a pointed end. It was analysed by dr. sc. I. Zamboni using the PIXE method at the Ruđer Bošković Institute.

1st - 4th century CE

Unpublished.

K116 Ear probe, silver
Inv. no. A-4563-4, Sisak
FIG. 69/5
l. 10.1 cm, recipient w. 0.3 cm, handle d. 0.33 cm

Fragmented ear probe with a fragmented flat round recipient, and a pointed end. On the transition between the round handle and the recipient, the handle tapers for 0.6 cm to a diameter of 0.13 cm.

1st - 4th century CE

Unpublished.

K117
FIG. 69/6
Ear probe, silver
Inv. no. A-4563-5, Sisak
l. 9.5 cm, recipient w. 0.5 cm, handle d. 0.3 cm

Ear probe with a round handle that has a round flat recipient, and a pointed end.

1ST - 4TH century CE

Unpublished.

K118
FIG. 69/7
Ear probe, silver
Inv. no. A-4563-7, Sisak
l. 11.2 cm, recipient w. 0.4 cm, handle d. 0.25 cm

Ear probe with a round handle that has a round flat recipient, and a pointed end.

1ST - 4TH century CE

Unpublished.

K119
FIG. 69/8 89/2
Ear probe, silver
Inv. no. A-4563-8, Sisak
l. 12.3 cm, recipient w. 0.5 cm, handle d. 0.2cm

Ear probe with a round handle that has a round flat recipient, and a pointed end. It was analysed by dr. sc. I. Zamboni using the PIXE method at the Ruđer Bošković Institute.

1ST - 4TH century CE

Unpublished.

K120
FIG. 69/9
Ear probe, silver
Inv. no. A-19096, Sisak
l. 8.55 cm, recipient w. 0.3 cm, handle d. 0.25cm

Fragmented ear probe with a round handle that has a damaged round flat recipient, and a bent pointed end. Decorated with ring moulding on the transition between the handle and the recipient.

1ST - 4TH century CE

Unpublished.

K121
FIG. 69/10
Ear probe, silver
Inv. no. A-19097, Sisak
l. 4.7 cm, recipient w. 0.3 cm, handle d. 0.19cm

Ear probe with a round handle that has a round flat recipient, and a pointed end.

1ST - 4TH century CE

Unpublished.

K122
FIG. 70/1
Ear probe, bone
Inv. no. A-7294-1, Sisak
l. 13.2 cm, recipient w. 0.5 cm, handle d. 0.4cm

Fragmented ear probe with a polygonal handle that has an oval flat recipient, and a pointed end with a missing tip.

1ST - 4TH century CE

Gregl (1982: T. 3/7)

K123
FIG. 70/2
Ear probe, bone
Inv. no. A-7363-1, Sisak, 1912 dredging of the Kupa river
l. 11.95 cm, recipient w. 0.4 cm, handle d. 0.45cm

Fragmented ear probe with a round handle that has an oval flat recipient, and a pointed ending with a missing tip.

1ST - 4TH century CE

Gregl (1982: T. 3/8)

K124
FIG. 70/3 89/4
Ear probe, bone
Inv. no. A-7363-3, Sisak, 1912 dredging of the Kupa river
l. 7.7 cm, recipient w. 0.5 cm, handle d. 0.45cm

Fragmented ear probe with a round handle that has an oval flat recipient. The other end is missing.

1ST - 4TH century CE

Unpublished.

K125
FIG. 70/4
Ear probe, bone
Inv. no. A-7363-4, Sisak, 1912 dredging of the Kupa river
l. 4.1 cm, recipient w. 0.4 cm, handle d. 0.3cm

Fragmented ear probe with a round handle that has an oval flat recipient. The other end is missing.

1ST - 4TH century CE

Unpublished.

K126
FIG. 68/1 89/3
Ear probe, bronze
Inv. no. A-19098, Sisak
l. 7.4 cm, recipient w. 0.35 cm, handle d. 0.2cm

Ear probe with a polygonal handle that has a round flat recipient, and a pointed end. A shallow notch, 2 cm in length, is visible

where the recipient and handle connect.

1st - 4th century CE

Unpublished.

K127
FIG. 68/2
Ear probe, bronze
Inv. no. A-4418-36, Sisak, 1912 dredging of the Kupa river
l. 8.95 cm, recipient w. 0.4 cm, handle d. 0.2cm

Fragmented ear probe with a polygonal handle that has an oval flat recipient, and a pointed end with a missing tip.

1st - 4th century CE

Unpublished.

K128
FIG. 66/1 90/1
Ear probe, bronze
Inv. no. A-4410-13, Sisak-Kupa, 1909 donation by M. Šipuš
l. 13.5 cm, recipient w. 0.4 cm, handle d. 0.5 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle and an enlargement near the recipient.

1st - 4th century CE

Unpublished.

K129
FIG. 66/2 90/2
Ear probe, bronze
Inv. no. A-4420-6, Sisak, 1909 donation by A. Bukvić
l. 10.3 cm, recipient w. 0.55 cm, handle d. 0.35 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle that tapers towards the recipient and has an oval enlargement.

1st - 4th century CE

Unpublished.

K130
FIG. 66/3 90/3
Ear probe, bronze
Inv. no. A-4435-10, Sisak
l. 8.8 cm, recipient w. 0.4 cm, handle d. 0.3 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle and an enlargement near the recipient.

1st - 4th century CE

Unpublished.

K131
FIG. 66/4 90/4
Ear probe, bronze
Inv. no. A-4438-5, Sisak, 1892 donation by Lj. Ivkanec
l. 12.4 cm, recipient w. 0.4 cm, handle d. 0.45 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle with an enlargement.

1st - 4th century CE

Unpublished.

K132
FIG. 66/5
Ear probe, bronze
Inv. no. A-4421-2, Sisak, 1912 dredging of the Kupa river
l. 10.5 cm, recipient w. 0.6 cm, handle d. 0.35 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle with ring mouldings after which turns into polygonal shape.

1st - 4th century CE

Unpublished.

K133
FIG. 66/6 71/1 90/6
Ear probe, bronze
Inv. no. A-4434-3, Sisak
l. 13 cm, recipient w. 0.4 cm, handle d. 0.45 cm

Ear probe with a flat oval recipient, and a pointed end. It has a polygonal handle with an enlargement decorated with ring-and-polygonal mouldings.

1st - 4th century CE

Unpublished.

K134
FIG. 66/7 71/2
Ear probe, bronze
Inv. no. A-4441, Sisak, 1912 dredging of the Kupa river
l. 13.4 cm, recipient w. 0.4 cm, handle d. 0.25 cm

Ear probe with a concave oval recipient, perpendicular to the handle, and a pointed end. The handle has a square enlargement in the upper part. It is decorated with tiny notches along the edges and incised circles in the middle.

1st - 4th century CE

Gregl (1982: T. 3/1, T. 11/2), Tesori nazionali (1991: no. 155/6)

K135 Ear probe, bronze
FIG. Inv. no. A-4439-58, Sisak, 1912 dredging of the Kupa river
65/1 l. 9.2 cm, recipient w. 0.45 cm,
69/1 handle d. 0.2 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle that is twisted towards the recipient.

1ST - 4TH century CE

Gregl (1982: T. 2/6),
Tesori nazionali (1991: no. 155/3)

K136 Ear probe, bronze
FIG. Inv. no. A-4438-3, Sisak, 1892 donation by Lj. Ivkanec
65/2 l. 8.1 cm, recipient w. 0.35 cm,
69/2 handle d. 0.15 cm

Ear probe with a flat oval recipient. The other end is damaged. It has a round handle with ring-and-disc moulding.

1ST - 4TH century CE

Unpublished.

K137 Ear probe, bronze
FIG. Inv. no. A-4438-1, Sisak, 1892 donation by Lj. Ivkanec
65/3 l. 15.3 cm, recipient w. 0.5 cm,
69/3 handle d. 0.25 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle decorated with ring-and-disc moulding near the recipient.

1ST - 4TH century CE

Unpublished.

K138 Ear probe, bronze
FIG. Inv. no. A-4436-4, Sisak, 1909 donation by A. Bukvić
65/4 l. 9.9 cm, recipient w. 0.5 cm,
69/4 handle d. 0.3 cm

Ear probe with a flat oval recipient, perpendicular to the handle, and a pointed end. It has a round handle decorated with ring-and-disc moulding and is twisted towards the recipient.

1ST - 4TH century CE

Gregl (1982: T. 2/5)

K139 Ear probe, bronze
FIG. Inv. no. A-4434-20, Sisak
65/5 l. 8.6 cm, recipient w. 0.6 cm,
68 handle d. 0.2 cm
69/5 Ear probe with a flat oval recipient, and a pointed end. It has a round handle decorated with incisions on the posterior side.

1ST - 4TH century CE

Gregl (1982: T. 2/1)

K140 Ear probe, bronze
FIG. Inv. no. A-4434-18, Sisak
65/6 l. 5.8 cm, recipient w. 0.5 cm,
69/6 handle d. 0.25 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle with a series of incisions. The recipient is almost perpendicular to the handle.

1ST - 4TH century CE

Unpublished.

K141 Ear probe, bronze
FIG. Inv. no. A-4418-33, Sisak, 1912 dredging of the Kupa river
65/7 l. 8.1 cm, recipient w. 0.3 cm,
69/7 handle d. 0.15 cm

Ear probe with a flat oval recipient, and a pointed end. It has a round handle decorated with ring-and-disc moulding.

1ST - 4TH century CE

Unpublished.

K142 Ear probe, bronze
FIG. Inv. no. A-4415-20, Sisak, 1913 dredging of the Kupa river
67/1 l. 13.6 cm, recipient w. 0.4 cm,
handle d. 0.15 cm

Ear probe with a concave oval recipient, perpendicular to the handle, and a pointed end. It has a round handle that is twisted in the upper part.

1ST - 4TH century CE

Gregl (1982: T. 1/4)

K143 Ear probe, bronze
FIG. Inv. no. A-4415-23, Sisak, 1913 dredging of the Kupa river
67/2 l. 8 cm, recipient w. 0.55 cm,
handle d. 0.15 cm

Ear probe with a concave oval recipient, perpendicular to the handle, and a pointed end. It has a round handle twisted in the upper part.

1st - 4th century CE

Unpublished.

K144 Ear probe, bronze
FIG. Inv. no. A-19221, Sisak
67/3 l. 16.5 cm, recipient w. 0.4 cm, handle d. 0.25 cm

Ear probe with a concave oval recipient, perpendicular to the handle, and a pointed end. It has a round handle that is twisted in the middle and ring-and-disc moulding. The handle has one pronounced moulding towards the recipient.

1st - 4th century CE

Unpublished.

K145 Ear probe, bronze
FIG. Inv. no. A-4435-1, Sisak
64/1 l. 13.2 cm, recipient w. 0.4 cm,
66 handle d. 0.25 cm
91/3

Ear probe with a concave oval recipient, perpendicular to the handle, and a pointed end. It has a round handle twisted in the upper part.

1st - 4th century CE

Tesori nazionali (1991: no. 155/4)

K146 Ear probe, bronze
FIG. Inv. no. A-4415-13, Sisak, 1913 dredging of the Kupa river
64/3 l. 13.2 cm, recipient w. 0.4 cm,
91/2 handle d. 0.2 cm

Ear probe with a concave oval recipient, perpendicular to the handle, and a pointed end. It has a round handle twisted in the upper part.

1st - 4th century CE

Unpublished.

K147 Ear probe, bronze
FIG. Inv. no. A-4415-18, Sisak, 1913 dredging of the Kupa river
64/2 l. 13.8 cm, recipient w. 0.4 cm,
91/1 handle d. 0.25 cm

Ear probe with a concave oval recipient, perpendicular to the handle, and a pointed end. It has a round handle twisted in the upper part.

1st - 4th century CE

Gregl (1982: T. 1/6)

K148 Ear probe, iron
FIG. Inv. no. A-4439-3, Sisak, 1912 dredging of the Kupa river
64/4 l. 11.4 cm, recipient w. 0.5 cm,
91/5 handle d. 0.3 cm

Ear probe with a shell-shaped recipient, and a pointed end. It has a round handle with ring-and-disc moulding.

1st - 4th century CE

Unpublished.

K149 Ear probe, bronze
FIG. Inv. no. A-4414-1, Sisak, 1912 dredging of the Kupa river
64/5 l. 12.3 cm, recipient w. 0.55 cm,
91/4 handle d. 0.35 cm

Ear probe with a concave oval recipient, and a pointed end. It has a round handle decorated with three ring-shaped incisions on the anterior side.

1st - 4th century CE

Unpublished.

K150 Ear probe, bronze
FIG. Inv. no. A-19112, Sisak
64/6 l. 5.9 cm, recipient w. 0.4 cm,
91/6 handle d. 0.25 cm

Ear probe with a concave oval recipient, and a pointed end. It has a round handle that is damaged towards the pointed end.

1st - 4th century CE

Unpublished.

Double olivary end probes

The Collection contains three bronze doble olivary ended probes.

K151 Double olivary end probe, bronze
FIG. Inv. no. A-6051, Sisak
63/1 l. 17.3 cm, recipient w. 0.3 cm,
92/1 handle d. 0.2 cm

Round handle has olivary ends on both sides.

1st - 4th century CE

Unpublished.

K152 Double olivary end probe, bronze
FIG. Inv. no. A-4563-1, Sisak
63/2 l. 18 cm, recipient w. 0.3 cm,
92/2 handle d. 0.2 cm

Round handle has olivary ends on both sides, one ending is perforated with a rectangular hole.

1st - 4th century CE

Unpublished.

K153 Double olivary end probe, bronze
FIG. Inv. no. A-4401, Sisak, 1912 dredging of the Kupa river
63/3 l. 16.4 cm, recipient w. 0.25 cm,
92/3 handle d. 0.2 cm

Round handle has olivary ends on both sides.

1st - 4th century CE

Gregl (1982: T. 8/6)

Spoon probes

The Collection contains 93 spoon probes. The handles can have an oval or polygonal cross-section. If the handle is decorated, it can be fluted (11), twisted (16), scaled (2) or have a groove with inserted wire (1). Some spoon probes' handles have ring-and-disc moulding near the recipient (33) or a rhomboid extension (14). One spoon probe has a workshop stamp "CARANTI" on the recipient (inv. no. A-15881).

K154 Spoon probes, group
Inv. no. A-4410-2, 6, 8, 9, 11, 14, A-4439-5, 9, 25, 29, 43, Sisak
l. 9.9 - 15 cm, recipient l. 2 - 3.5 cm, recipient w. 0.35 - 0.5 cm, handle d. 0.15-0.3 cm

1st - 4th century CE

K155 Spoon probe, bronze
FIG. Inv. no. A-4474-1, Sisak
47/1 l. 12.2 cm, recipient l. 1.5 cm,
51/1 recipient w. 0.6 cm, handle d. 0.2 cm
93/2 Spoon probe with a round handle, a leaf-shaped recipient, and an olivary end. It is decorated with ring moulding near the recipient.

1st - 4th century CE

Gregl (1982: T. 5/5)

K156 Spoon probe, bronze
FIG. Inv. no. A-4439-28, Sisak, 1912 dredging of the Kupa river
47/2 l. 13 cm, recipient l. 3.8 cm,
51/2 recipient w. 0.5 cm, handle d. 0.2 cm
93/1 Spoon probe with a round handle, a leaf-shaped recipient, and an olivary end. It is decorated on the transition between the handle and the recipient, between two disc moulding there are four ring ones.

1st - 4th century CE

Gregl (1982: T. 5/2)

K157 Spoon probe, bronze
FIG. Inv. no. A-4439-11, Sisak, dredging of the Kupa river
47/3 l. 11.2 cm, recipient l. 2.4 cm,
51/3 recipient w. 0.55 cm, handle d. 0.2 cm
99/5 Spoon probe with a fluted handle, a leaf-shaped recipient, and an olivary end. The handle is decorated with rich ring mouldings near the recipient.

1st - 4th century CE

Gregl (1982: T. 4/5)

K158 Spoon probe, bronze
FIG. Inv. no. A-4439-6, Sisak, 1912 dredging of the Kupa river
47/4 l. 13.9 cm, recipient l. 2.4 cm,
51/4 recipient w. 0.65 cm, handle d. 0.15 cm
93/4 Spoon probe with a fluted handle, a leaf-shaped recipient, and an olivary end. The hanlde is decorated with ring mouldnigs after which it becomes plain.

1st - 4th century CE

Gregl (1982: T. 5/1)

K159 Spoon probe, bronze
FIG. Inv. no. A-4410-12, Sisak, dredging of the Kupa river
47/5 l. 11.1 cm, recipient l. 1.7 cm,
51/5 recipient w. 0.5 cm, handle d. 0.2 cm
93/3 Spoon probe with a fluted handle, a fragmented long leaf-shaped recipient,

and an olivary end. On the transition between the handle and the recipient, there is a rombic extension with two notches.

1st - 4th century CE

Unpublished.

K160 Spoon probe, bronze
Inv. no. A-4410-7, Sisak, 1909
donation by M. Šipuš
l. 11.2 cm, recipient l. 1.5 cm,
recipient w. 0.25 cm, handle d. 0.15 cm
FIG. 47/6, 51/6

Spoon probe with a twisted handle, a leaf-shaped recipient, and an olivary end. On the transition between the handle and the recipient, there is a rhombic extension that has two semicircular notches on the posterior side.

1st - 4th century CE

Unpublished.

K161 Spoon probe, bronze
Inv. no. A-4410-5, Sisak, 1909
donation by M. Šipuš
l. 14.5 cm, recipient l. 3.8 cm,
recipient w. 0.6 cm, handle d. 0.2 cm
FIG. 47/7, 49, 51/7, 93/8

Spoon probe with a twisted handle, a leaf-shaped recipient, and an olivary endin. On the transition between the handle and the recipient, there is a rhombic extension with two semicircular notches that appear on both sides of the extension.

1st - 4th century CE

Unpublished.

K162 Spoon probe, bronze
Inv. no. A-4472, Sisak, dredging of the Kupa river
l. 13.4 cm, recipient l. 3.4 cm,
recipient w. 0.5 cm, handle d. 0.15 cm
FIG. 47/8, 51/8

Spoon probe with a twisted handle, a leaf-shaped recipient, and an olivary end. On the transition between the handle and the recipient, there is a rhombic extension with two semicircular notches that appear on both sides of the extension.

1st - 4th century CE

Gregl (1982: T. 5/6),
Tesori nazionali (1991: no. 155/10)

K163 Spoon probe, bronze
Inv. no. A-4439-13, Sisak,
donation by A. Colussi
l. 13.2 cm, recipient l. 2.6 cm,
recipient w. 0.65 cm, handle d. 0.3 cm
FIG. 48, 93/7

Spoon probe with a polygonal handle, a leaf-shaped recipient, and an olivary end. It is decorated with ring moulding near the recipient. The handle has a round cross-section after the decoration.

1st - 4th century CE

Gregl (1982: T. 5/3)

K164 Spoon probe, bronze
Inv. no. A-4439, Sisak,
donation by A. Colussi
l. 9.1 cm, recipient l. 3.6 cm,
recipient w. 0.5 cm, handle d. 0.15 cm
FIG. 52, 53, 93/6

Decorated handle has a spiral notch with a thin wire inlay found only in traces. The handle ends, on one end, with a leaf-shaped recipient. On the transition between the handle and the recipient, the handle is decorated with ring moulding. The other part of the handle tapers towards the end, but the top part is missing.

1st - 4th century CE

Gregl (1982: T. 5/4)

K165 Spoon probe, bronze
Inv. no. A-15881, Sisak, dredging of the Kupa river
l. 12.9 cm, recipient l. 3.3 cm,
recipient w. 0.5 cm, handle d. 0.3 cm
FIG. 54, 55, 93/9

Spoon probe with a round handle, a leaf-shaped recipient, and an olivary end. The recipient has a stamp "CARANTI" on the inside.

1st - 4th century CE

Gregl (1983a),
Tesori nazionali (1991: no. 145)

Scalpels

The Collection contains 6 scalpel handles which can be divided into two basic types: short (5) and long handles (1).

K166
FIG. 94/1 104/1
Scalpel handle, bronze
Inv. no. A-6475-1, Sisak-Kupa, 1907
donation A. Colussi
l. 7.8 cm, w. 1 cm
Short rectangular bronze scalpel handle with a leaf-shaped blunt dissector on one side, and a slot for inserting blades on the other. The leaf-shaped blunt dissector has a middle ridge. The slot for inserting blades is curve-shaped, and the slot contains traces of iron.
1ST - 4TH century CE
Unpublished.

K167
FIG. 94/2 104/2
Scalpel handle, bronze
Inv. no. A-6475-2, Sisak-Kupa,
donation by A. Colussi
l. 7.38 cm, w. 1.1 cm
Short rectangular bronze scalpel handle with a leaf-shaped blunt dissector on one side, and a slot for inserting blades on the other. The leaf-shaped blunt dissector has a middle ridge. The slot for inserting blades is curve-shaped, and the slot contains traces of iron.
1ST - 4TH century CE
Unpublished.

K168
FIG. 94/3 104/3
Scalpel handle, bronze
Inv. no. A-6475-3, Sisak-Kupa,
donation by A. Colussi
l. 6.6 cm, w. 0.5 cm
Short rectangular bronze scalpel handle with a leaf-shaped blunt dissector on one side, and a slot for inserting blades on the other. The leaf-shaped blunt dissector has a middle ridge. The slot for inserting blades is curve-shaped, and contains traces of iron.
1ST - 4TH century CE
Unpublished.

K169
FIG. 94/4 104/4
Scalpel handle, bronze
Inv. no. A-6475-4, Sisak-Kupa,
donation by A. Colussi
l. 5 cm, w. 1 cm
Short rectangular bronze scalpel handle with a leaf-shaped blunt dissector on one side, and a slot for inserting blades on the other. The leaf-shaped blunt dissector has a damaged middle ridge. The slot for inserting blades is curve-shaped, and contains traces of iron.
1ST - 4TH century CE
Unpublished.

K170
FIG. 94/5 104/5 125/5
Scalpel handle, bronze
Inv. no. A-6475-5, Sisak-Kupa,
donation by A. Colussi
l. 8.1 cm, w. 0.7 cm
Short rectangular bronze scalpel handle with slots on both sides. One slot had an inserted blade, and the other a blunt linear attachment. Both slots are curve-shaped.
1ST - 4TH century CE
Unpublished.

K171
FIG. 94/6 104/6 125/6
Scalpel handle, bronze
Inv. no. A-6207, Sisak, 1912 dredging of
the Kupa river
l. 9.1 cm, w. 0.6 cm
Long bronze scalpel handle decorated with ring-and-disc moulding. It has a leaf-shaped perforated blunt dissector on one side. A slot for inserting blades is on the other side.
1ST - 4TH century CE
Unpublished.

Blunt hooks

The Collection contains 6 blunt hooks made of bronze. Four hooks have an ornament.

K172
FIG. 95/1
Blunt hook, bronze
Inv. no. A-6132-1, Sisak, 1912 dredging of
the Kupa river
l. 14.2 cm, d. 0.3 cm
Blunt hook made of bronze with a bent end on one side and a straight, pointed

end on the other. Bent end has a carved reticular ornament.

1st - 4th century CE

Unpublished.

K173 — FIG. 95/2
Blunt hook, bronze
Inv. no. A-6132-2, Sisak, 1912 dredging of the Kupa river
l. 12.2 cm, d. 0.3 cm

Blunt hook made of bronze with a bent end on one side and a straight, pointed end on the other. Bent end has a carved reticular ornament.

1st - 4th century CE

Unpublished.

K174 — FIG. 95/3
Blunt hook, bronze
Inv. no. A-6134, Sisak, 1898 purchase from L. Hermann
l. 12 cm, d. 0.25 cm

Blunt hook made of bronze with a bent end on one side and a straight, pointed end on the other. Bent end has a carved reticular ornament.

1st - 4th century CE

Unpublished.

K175 — FIG. 95/4
Blunt hook, bronze
Inv. no. A-4568, Sisak, 1912 dredging of the Kupa river
l. 11.4 cm, d. 0.3 cm

Blunt hook made of bronze with a bent end on one side and a straight, pointed end on the other. Bent end has a carved reticular ornament.

1st - 4th century CE

Unpublished.

Tweezers

The Collection contains 26 metal tweezers, which can be divided into groups based on the form of the arm into tweezers with straight arms (8) and arms curved inwards on the open side (12). A special group of tweezers are tweezers with arms curved inwards at the upper part of arms or in the middle (4). Tweezers can have a flat or a pointed tip. Just one example from the Collection has an extremely wide tip (inv. no. A-4462-2). All tweezers are made from one piece of metal, apart from one iron example (inv. no. A-4004-1).

K176 — FIG. 56/1, 97/1
Tweezers, iron
Inv. no. A-4004-3, Sisak
l. 7.4 cm, w. 0.4-0.55 cm

Iron tweezers with arms curved inwards at the bottom.

1st - 4th century CE

Gregl (1982, T. 7/2)

K177 — FIG. 56/2, 97/2
Tweezers, bronze
Inv. no. A-4487, Sisak
l. 9.9 cm, w. 0.5 cm

Bronze tweezers with arms curved inwards at the bottom.

1st - 4th century CE

Unpublished.

K178 — FIG. 56/3, 97/3
Tweezers, bronze
Inv. no. A-4463-1, Sisak
l. 9.4 cm, w. 0.1 - 0.4 cm

Bronze tweezers with straight, pointed arms.

1st - 4th century CE

Unpublished.

K179 — FIG. 56/4, 57, 97/4
Tweezers, iron
Inv. no. A-4004-1, Sisak
l. 10.3 cm, w. 0.1-0.7 cm

Iron tweezers with straight arms and pointed tips. Made from several parts. The arms are connected to the base by two rivets.

1st - 4th century CE

Gregl (1982, T. 7/1)

K180 — FIG. 56/5, 97/5
Tweezers, bronze
Inv. no. A-4489, Sisak
l. 6.3 cm, w. 0.3 cm

Bronze tweezers with arms curved inwards in the upper part and flat tips.

1st - 4th century CE

Gregl (1982, T. 7/8)

K181 Tweezers, bronze
Inv. no. A-4466, Sisak
FIG. 56/6, 97/6
l. 4.2 cm, w. 0.4 - 0.6 cm
Bronze tweezers with arms curved inwards and flat tips.
1ST - 4TH century CE
Unpublished.

Spoons

The Collection contains 54 metal spoones that have round, leaf-shaped, and rectangular recipients. Metal spoons are mostly made of a combination of metals. They can be made of bronze with a layer of tin on the recipient (10) or they can have a tin recipient and an iron handle. Fragmented elements of tin recipients (14) are also preserved and have visible traces of iron handles. Iron handles without recipients (7) can also be found. The Colleciton holds one bronze, tin and silver spoon each. The interior side of the recipient is usually decorated with incised circles on the edge or a dot in the middle of the recipient. On the exterior side, a common ornament are two incised lines on each side of the handle-recipient connection. The only exception is a spoon with a rectangular recipient. Both the recipient and the handle are decorated (inv. no. A-4406).
The Greek and Roman Collection of the AMZ also holds 13 bone spoons with round recipients decorated with incised circles or a dot in the middle.

K182 Spoons, group
Inv. no. A-4401, A-4402-1, 3-5, A-4404, A-4405-1, A-4452-2, 15, 16, 18, 20, 28, A-4457-2, Sisak
l. 4.4 - 11.5 cm, recipient d. 2.4 - 2.8 cm, handle d. 0.3 - 0.4 cm
1ST - 4TH century CE

K183 Spoon, bronze
Inv. no. A-4501, Sisak, 1909 dredging of the Kupa river
FIG. 74/1, 98/3
l. 9.6 cm, recipient w. 2.3 cm
Fragmented bronze spoon with a leaf-shaped recipient. Close to the recipient, the handle is polygonal in cross-section and decorated by fluting. The other end of the handle is missing.
1ST - 4TH century CE
Gregl (1982, T. 6/2)

K184 Spoon, silver
Inv. no. A-19074, Sisak
FIG. 74/2, 98/4
l. 14.5 cm, recipient w. 2.2 cm
Silver spoon with a leaf-shaped recipient. The bottom side of the recipient is decorated with incised lines along the edge of the handle. The handle is smooth and pointed at the end. It was analysed by dr. sc. I. Zamboni using the PIXE method at the Ruđer Bošković Institute.
1ST - 4TH century CE
Unpublished.

K185 Spoon, bronze
Inv. no. A-4402-2, Sisak, 1909 dredging of the Kupa river
FIG. 74/3, 98/5
l. 10.7 cm, recipient d. 2 cm
Bronze spoon with a round recipient. The handle is smooth and pointed at the end. The bottom side of the recipient is decorated with incisions along the handle.
1ST - 4TH century CE
Gregl (1982, T. 6/2)

K186 Spoon, bronze
Inv. no. A-5894-1, Sisak, donation by Lj. Ivkanec
FIG. 74/4, 98/2
l. 11.5 cm, recipient d. 1.6 cm
Bronze spoon with a round recipient. Traces of tin are visible on the recipient's surface. The handle is smooth and pointed at the end. The bottom side of the recipient is decorated with incisions.
1ST - 4TH century CE
Gregl (1982, T. 6/7)

K187 Spoon, iron/tin
Inv. no. A-4452-28, Sisak, 1912 dredging of the Kupa river
FIG. 74/5, 79, 98/6
l. 13.6 cm, recipient d. 2.5 cm
Spoon with a round tin recipient. The inside of the recipient is decorated with

the circle that runs along the edge and has a small notch in the middle. The handle is smooth, pointed on one end and made of iron.

1st - 4th century CE

Gregl (1982, T. 6/6)

K188
FIG. 74/6 98/1
Spoon, iron/lead
Inv. no. A-4406, Sisak, 1912 dredging of the Kupa river
l. 10,5 cm, recipient l. 1,4 cm, recipient w. 1,2 cm

Spoon with rectangular lead recipient whose longer sides are curved-in. The handle is made of iron, smooth and has a round cross-section. Its ending is missing. Close to recipient the handle becomes rectangular and is decorated with small incisions.

1st - 4th century CE

Gregl (1982, T. 6/4)

K189
FIG. 4 74/7 98/7
Spoon, bone
Inv. no. A-7254-1, Sisak-Kupa
l. 7.9 cm, recipient d. 1.3 cm

Bone spoon with a round recipient. The recipient is decorated with concentric rings, has a circular dent in the middle and is positioned asymmetrically to the handle. The handle is smooth and simple.

1st - 4th century CE

Unpublished.

K190
FIG. 74/8 98/8
Spoon, bone
Inv. no. A-7254-2, Sisak-Kupa
l. 9.2 cm, recipient d. 1.4cm

Bone spoon with a round recipient. The recipient is decorated with concentric rings and has a circular dent in the middle. The handle is smooth and simple.

1st - 4th century CE

Unpublished.

Cylindrical boxes for medical instruments

The Collection contains 7 cylindrical boxes for medical instruments. Two boxes are completely preserved (with a lid), while the remaining five are fragmented, with only the case (1) or the lid (4). They were made of metal (6) and bone (1). One lid has a workshop stamp OFSO.

K191
FIG. 99
Cylindrical box for medical instruments, bone
Inv. no. A-7245, Sisak, 1912 dredging of the Kupa river
l. 10 cm, d. 1-1.4 cm

Long and narrow cylindrical box for medical instruments, made of bone. The middle has a screw for a lid. The box is damaged on one end.

1st - 4th century CE

Unpublished.

K192
FIG. 100A
Cylindrical box for medical instruments, bronze
Inv. no. A-8132, Sisak, 1913 dredging of the Kupa river
h. 3.7cm, d. 3.5 cm

Cylindrical box for medical instruments decorated with three rows, each containing two incised lines. Triangular metal element for closing the lid was attached with three rivets, but only one is preserved. The workshop stamp OFSO is visible on top of the lid, inside a 0.65 cm long and 0.2 cm wide rectangle.

1st - 4th century CE

Unpublished.

K193
FIG. 100/1
Cylindrical box for medical instruments, bronze
Inv. no. A-6072, Sisak, 1913 dredging of the Kupa river
l. 3.5cm, d. 2.5 cm

Damaged cylindrical box for medical instruments decorated with one row containing four incised lines. A part of the closing element is preserved, shaped like a decorated triangle connected to the

lid with two rivets, but only one remains. The middle of the lid is decorated with concentric circles.

1st - 4th century CE

Unpublished.

K194
FIG. 100/2
Cylindrical box for medical instruments, bronze
Inv. no. A-6002, Sisak, 1912 dredging of the Kupa river
l. 3.5cm, d. 2.1 cm

Damaged cylindrical box for medical instruments. The top of the lid is dented. It had an ornament in the form of concentric rings.

1st - 4th century CE

Unpublished.

K195
FIG. 100/3
Lid of a cylindrical box for medical instruments, bronze
Inv. no. A-6245, Sisak, 1912 dredging of the Kupa river
l. 5.2cm, d. 1.4 cm

Fragmented lid of a cylindrical box for medical instruments. The top is missing. Four holes for rivets are visible along the top and bottom edge. Out of total eight rivets, only four are preserved. Two larger semicircular openings on the top and bottom edge of the lid are preserved, one above the other.

1st - 4th century CE

Unpublished.

K196
FIG. 84/1
Cylindrical box for medical instruments, bronze
Inv. no. A-6453, Sisak-Kupa
l. 9.7 cm, d. 1.6 cm

Cylindrical box for medical instruments with preserved case and lid. The case is decorated with four rows each containing two incised lines. The top of the lid has an incised central circle. The box cannot be opened.

1st - 4th century CE

Unpublished.

K197
FIG. 84/2
Cylindrical box for medical instruments, bronze
Inv. no. A-6692, Sisak, 1909 donation by A. Bukvić
l. 11.4 cm, d. 1.3 cm

Cylindrical box for medical instruments, undecorated and poorly made with visible gaps in the bronze sheet. On the lid, part of the closing loop is preserved, while the only remaining part of the closing element on the case is a fragmented ribbon-shaped connection. The top of the lid is decorated with a central circle. The box can be opened.

1st - 4th century CE

Unpublished.

K198
FIG. 57/2
Water pipe, ceramic
Inv. no. A-19222, Sisak?
l. 40.8 cm, d. 6-8.9 cm

Fragment of a cylindrical water pipe that narrows towards one end. At a distance of 2.5 cm from the narrow end the pipe has an preprendicular round rib that enabled it to connect to other pipes.

1st - 4th century CE

Unpublished.

K199
FIG. 57/1
Water pipe, ceramic
Inv. no. A-19223, Sisak?
l. 34.6 cm, d. 8.3-11.7 cm

Fragment of a cylindrical water pipe that narrows towards one end. 4.5 cm from the narrow end, the pipe has an perpendicular round rib and a screw for connecting it to other pipes.

1st - 4th century CE

Unpublished.

K200
FIG. 59/1
Water pipe, lead
Inv. no. A-18584, Sisak-Kupa
l. 28.3 cm, w. 6.8 cm

Fragment of a lead water pipe with an irregular round cross-section. The pipe is made of a lead sheet that was bent and the edges closed.

1st - 4th century CE

Unpublished.

K201
FIG. 59/2
Water pipe, lead
Inv. no. A-18583, Sisak, 1924 donation by Dierich
l. 29.2 cm, w. 14.8 cm

Fragment of a lead water pipe with an irregular round cross-section.

The pipe is made of a lead sheet that was bent and the edges closed. The workshop stamp in high relief is on the outer side of the pipe:
"COL. SIS TELSER F". Along the rim the inscription is carved "CXVD CCC L".

1st - 4th century CE

Unpublished.

K202 Human skull with traces of trepanation, Ludbreg
Grave 1, male, 51-55 years of age,
(late antiquity)

Osteological Collection of the Anthropological Centre at the Croatian Academy of Sciences and Arts
h. 20.7 cm

Trepanation. Oval defect 4.3 x 3.1 cm in size is visible on the left side of the skull. Its edges are thickened, smooth and remodeled without any trace of infection, i.e. inflamation which suggest that the procedure was successful.

Novak, M. et al. (2013)

K203 Human vertebral column with signs of advanced tuberculosis, Stari Jankovci
Grave 37, female, 31-35 years of age
(early medieval period)

Osteological Collection of the Anthropological Centre at the Croatian Academy of Sciences and Arts

h. 20 cm

Tuberculosis of vertebral column. Pathological changes are seen on the lumbar and thoracic vertebrae. The body of the first lumbar vertebra is almost completely destroyed which resulted in the prolapse of the spine and in coalescence with the twelfth thoracic and first lumbar vertebrae. The third lumbar vertebra shows signs of mild compensational growth which means that pathological changes have taken place in an early age. Additional changes are seen in the thoracic section of the spine were six vertebrae are infected and are forming in a sharp hump.

Šlaus, M. (2006)

K204 Human skull with a depression fracture, Velim – Velištak
Grave 34, male, 31-35 years of age
(early medieval period)

Osteological Collection of the Anthropological Centre at the Croatian Academy of Sciences and Arts

h. 22.7 cm

Fracture is located on the posterior side and overlaps the seam connecting the frontal and paretal bone. Defect measures 30 x 35 mm in size and is indented for 0,8 cm. The fracture's rims are oblongated and remodeled. The fracture healed well without the traces of inflamation.

Šlaus, M. (2006)

K205 Human tibia with signs of osteomyelitis, Vinkovci – Makart
Grave 56, male, 31-35 years of age
(late Antiquity)

Osteological Collection of the Anthropological Centre at the Croatian Academy of Sciences and Arts

l. 37.5 cm

The severe osteomyelitis is present on the whole diaphysis of the left tibia; the diaphysis is thickened with healed periostitis and the emergence of five cloaca is present. In the topmost traces of sequestration are visible- the most likely cause of osteomyelitis is ankle injury as the left pop bone has fused with the tibia.

Unpublished.

POPIS IZVORA
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