

# Ancient Greek medicine during Hellenistic age and the Roman Empire

## Medycyna grecka w okresie hellenistycznym i rzymskim

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### Abstract

In the Hellenistic Age and during the Roman Empire the greatest influence on the development of medicine was exerted by two philosophers: Plato and Aristotle. Their views demonstrated by individual approaches of physicians and medical trends of empiricists, scepticists, dogmatists, methodologists and others. Beginning from the 1st century BC the overwhelming activity of Greek medicine practitioners was transferred to Rome where the most outstanding physicians such as Archagatos, Asclepiades, Temison, Soranos, Athenoios, Archigenes and others appeared. In 46 BC all free foreigners practising in Rome were granted citizenship. In the first centuries of the Roman Empire medical practitioners were exempted from tax obligation and released from the performance of public service duties.

**Keywords:** Hellenistic Age, medical trends at the turn of millennia, Greek physicians in Rome

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During the Hellenistic period, i.e. after the wars of Alexander the Great, medicine was heavily influenced by two philosophers: Plato (427-347 BCE) and his student Aristotle (384-322 BCE).

Plato lived during the times when Athens bloomed, Pericles was ruling over it, Phidias was responsible for creating the current beauty standards, and the Socratic scientific and ethical movement shaped the culture. Plato came from a respectable Greek family, who cared for the intellectual well-being of their members and providing good education for their offspring. In his youth, Plato was very athletic, therefore he participated in the Olympics. At twenty years of age, he came across Socrates who, for the following eight years, shaped his logical and aesthetic knowledge. After the death of his master, Plato left Athens for a journey that would take him twelve years to finish; by that time he travelled, among others, to Egypt and Italy. He returned to Athens as a mature man. He founded his Academy on the Grove of Academus and devoted himself to a life of scientific and didactic work. He was not active in politics but dreamed of a form of government in which only philosophers would rule, as philosophers ought to shape the world with the idea of goodness in their mind. Plato tried to implement that concept in Syracuse, Sicily, which he visited thrice. Unfortunately, his plan was to no avail, which was a huge disappointment for him. He did not start a family and for the last forty years of his life devoted himself to creative work and teaching. He died in Athens at an elderly age.

When it comes to his philosophical views, at first he agreed with Socrates on ethics and conceptual knowledge. Later,

thanks to the theory of knowledge and action, he came up with the theory of Forms. He distinguished Forms recognisable by our senses and Forms contained in concepts, i.e. Forms real and ideal. By that logic, items were not Forms. Only indestructible, immortal ideas were considered Forms. Eventually, he began to believe that there exists only one Form – ideas. In contrast to natural philosophers who believed that the soul is some kind of matter, Plato stated it was real but immaterial. He viewed the soul as an immortal human element that in the biological sense was connected to the body but in the transcendental context was independent of the body; it did not experience any feelings or passions and did not receive sensual sensations. The soul was only the reasoning. He interpreted nature through the lens of its purposefulness. On the basis of the perceptible purposefulness and rational order, he concluded the existence of a benevolent creator, who brought the world to life and bestowed upon it spirituality and rationality. He divided the causes of the creation of the world into causal and purposeful, dependent on a deity, and material, lasting due to eternal matter. He expanded the idea of ethics by distinguishing three parts of the soul, which are responsible for its order and harmony. These were: reason, emotion, and desire. The fourth part, justice, connected them all. This theory of four cardinal virtues was praised in Europe throughout many centuries. Plato questioned the role of the empiric testing method, which he considered insufficient in scientific endeavours, as reliance on sensory data created the problem of uncertainty. According to Plato, a pure scientific

testing method was dialectics, which allowed seeking the truth by gathering concepts and theorems, their analysis and synthesis. This method was used mainly for examining ideas but also the essence of certain phenomena. To sum up, we can say that the principles of Plato's philosophy consisted of three concepts: the concept of idea, soul, and goodness.

Doctors who sought premises of knowledge in Plato's philosophy were called Dogmatics. They based their views on reasoning and rarely on observation. To confirm their deduction-based conclusions, they often resorted to experiments. They used the theory of four body fluids as their basis for classifying and naming diseases, describing their symptoms as mucous or bilious. Most Dogmatics were keen on using strong therapeutic measures, like bloodletting, laxatives, diuretics, and others. They considered themselves followers of Hippocrates' teachings but turned back from his recommendations mostly in the areas of discreet observation and gentle treatment. The most important period in Dogmatics' activity fell to the 4<sup>th</sup> and 3<sup>rd</sup> century BCE. A renowned representative of this school of thought was Praxagoras of Cos, who lived in the 4<sup>th</sup> century BCE. He was famous for distinguishing arteries from veins, and his views on the subject were a complete novelty. He did not, however, avoid the false premise that besides blood, blood vessels transport air. Praxagoras also dealt with heart rate monitoring in case of various medical conditions. He was considered an expert on humoristic theory on medical pathology and increased the number of Hippocratic body fluids from four to eleven.

Another representative of the school of Dogmatics was Diocles of Carystus, who lived in the 1<sup>st</sup> half of the 4<sup>th</sup> century BCE. He left behind several treatises on various medical subjects (such as pharmacology, dietetics, anatomy, or embryology). During his life, he was considered the Hippocrates of his time. He was renowned for distinguishing pneumonia from pleurisy [2].

According to medical sciences historians, a place in the pantheon of eminent medical thought inspirers also holds Aristotle, who lived in the 4<sup>th</sup> century BCE. He was a son of a doctor, a student of Plato, and an outstanding philosopher with a vast scope of interests (including logics, metaphysics, law, poetry, drama, zoology, and psychology). Having an unusually potent mind and enormous knowledge, he attracted the attention of Philip II of Macedon, who appointed the philosopher as a personal teacher of his son Alexander. Observation-based research and its outcomes became the measure of success for the young scholar. As a result, he described arterial and venous vessels, aorta, and ureter route. He believed that fetuses in the womb do not breathe, and the male and female embryos do not develop in separate partitions. Living in the 4<sup>th</sup> century BC, he confused ligaments and tendons with nerves, placed the centre of respiratory processes in the heart, and believed in the existence of four body fluids and veins connecting the liver with the right and left arm. He prescribed draining blood from hands depending on the

illness: in the case of liver ailments from the right hand, in the case of spleen disorders from the left. He started the classification of species. He was the creator of comparative anatomy and environmental morphology. He believed in the abiogenesis of living beings. He popularised the concept of entelechy – a non-material mystical force conditioning strength and life.

Aristotle was born in Stagira, Thracian Peninsula. Because of his father's profession, he had some medical and environmental knowledge. In 367 BCE he came to Athens, where he became a member of the Platonic Academy, with which he was involved for over 20 years, first as a student, then as a teacher and researcher. The education of young Aristotle had empirical grounds, which contradicted Plato's views. After the death of his master, Aristotle settled in Assos, Asia Minor. There he spent three years on strenuous scientific and teaching work. In 343 BCE he was the tutor and mentor of Alexander the Great. Later he left Stagira and returned to Athens, where he founded his own school, which he headed in 335–323 BCE. After the death of Alexander, he settled in Chalcis, where he died.

Aristotle fought with the Platonic doctrine of ideas. In his theory of cognition, he held the view that the search for rational knowledge and its acquisition can be done only through Empiricism. He considered the following factors as important qualities of any living beings: substance, form, energy, and purpose. According to his philosophical vision, nature was substantial, qualitative, dynamic, and purposeful. Pythagorean and Platonic philosophers liberated their teachings from sensual testimonies, unlike Aristotle, who returned to a viewpoint based on sensory evidence. By doing so, he broke off from an only-quantitative consideration of phenomena popular among Greeks, which had a significant impact on the development of biological research. In his metaphysical views, he expressed a belief in the eternity of the spatially limited world, consisting only of matter, which was a condition for all development. The core of all material substance consisted of its essence; therefore the substances were individual and the essence general. The principle of Aristotelianism can be found in a conviction that the general being can be found in individual things. In the context of the development of medical sciences, the fact that Aristotle undertook empirical, experimental scientific orientation, which was continued by his students (e.g. Theophrastus, who lived during the turn of 3<sup>rd</sup> century B.C), was very significant [1].

The last great philosophical school of thought of the Hellenistic age was The Scepticism, which denied the possibility of correctly resolving any given problem, and thus, for the sake of peace, recommended keeping restraint and silent. Sceptics rejected the cognitive methods using concepts, preached by most contemporary philosophers, including Plato and Aristotle. Under the influence of their school of thought and teachings, a group of doctors, called The Empiricists, started their work. The Empiricists claimed that the search for the cause of a disease was unimportant, thus rejecting the research and consider-

ation in the field of anatomy and physiology. The best certificate for that is the example of Philinus of Cos, who lived in the 3<sup>rd</sup> century BCE. He considered autopsies completely useless and unnecessary, despite listening to the teachings of Herophilus. The most important thing for Empiricists was the effect of treatment. They also thought that the physician undertaking the therapy should rely on the experience he had previously acquired. In this regard, they agreed with the teachings of Hippocrates, but have repeatedly criticised the famed doctor, among others, for his sentiments towards the humoristic theory on medical pathology.

During the 1<sup>st</sup> century BCE the main Greek medical activity moved to Rome together with the most outstanding doctors. The first Greek medic that moved to Rome in the 3<sup>rd</sup> century BCE was Archagathus, the son of Lysanias, who arrived at the rich and cosmopolitan capital of the empire in 219 BCE. Because of the medical treatments he carried out, he was nicknamed *wound doctor (vulnerarius)*. His brutal medical procedures, including amputation of limbs and other parts of the body, burning up wounds, etc., resulted in Archagathus being called a *human dogcatcher (carnifex)* [3].

It is worth noting that the Romans of that time, mostly the aristocracy, treated doctors and medicine with disgust. The opponent of doctors who came to Rome was Cato the Elder. In a letter to his son, he called the Greek medics “a perverse and defective human race”, that wants to destroy Rome. In later years doctors took care of gladiators and soldiers. Gradually, the rich Romans began to differentiate learned and competent Greeks from simple bloodletters and barbers performing simple surgeries. We could say that throughout the years the beaten and subjected to Roman rule Greeks conquered their conquerors.

The influx of physicians into Rome in the 2<sup>nd</sup> and 1<sup>st</sup> century BCE took place mostly due to the fall of Greek statehood and Greece itself being annexed by the Roman Empire. In the year 91 BCE, Asclepiades settled in Rome, having finished his studies in Athens and Alexandria. He was born in 128 BCE, in Prusa, Bithynia. While studying in Egypt, he read the works of many extraordinary figures of medicine at the time: Praxagoras, Chrisipod, Erasistratus, and Herophilus. Pliny the Elder referred to Asclepiades as a charlatan, who has gained unjust fame for promoting how to live healthy and performing “miraculous” acts of healing. Asclepiades was also interested in rhetoric at the beginning, but later fully committed himself to medicine. He wrote numerous volumes, although only parts of them survived to the present day. Throughout his practicing medicine in Rome, he slowly gained respect among the rich and the scholars. He became friends with, and the personal medic of Mark Antony, Cicero, and Marcus Licinius Crassus. One of his prodigious students was Lucretius, who is still highly regarded for his input in the field of natural philosophy. Asclepiades also became a favourite of Mithridates. Thanks to a great success in his studies and career, his inherent eloquence, and adapting the

Roman spirit, he gained considerable reputation, not overshadowed even by Hippocrates’s own fame and status.

Asclepiades’s scientific work was based on the belief that atoms, coming from the air, travelled through the lungs and stomach into the circulatory system, and healed tissue by percolating it together with blood and creating new matter. Inside of a tissue, the atoms were said to travel along miniature canals, referred to as pores. The atoms came in various shapes: square, oval, triangle. The atoms of soul were smooth, oval, and delicate. In his beliefs regarding anatomy and physiology, Asclepiades mostly followed the theories of Epicurus, an ancient materialist living between the 3<sup>rd</sup> and the 2<sup>nd</sup> century BCE, who was an epigone of Democritus. According to the physician, health was dependent on whether the pores and atoms were of a size suitable for an easy circulation or not. The daily circumstances, such as weather, not sufficient or too much physical activity and the quality of a person’s diet all led to imbalance in the fragile dependency mentioned above, causing illness. Any illness was subject to chance, it did not have to go through with all its stages, and could simply stop worsening, later to regress. The main goal in Asclepiades’s healing method was to restore the regular state of atoms and pores. To achieve it, he advised his patients to eat healthily, exercise, spend time outdoors, massages, horse riding, and drink water, as well as wine. Complying with the guidance of Epicurus and his students, he prescribed painkillers and sedatives, meaning to bring back the patient’s mental and spiritual well-being. His motto: *tuto, celeriter, et jucunde*, meant sure, quick, and pleasant healing process. That way, Asclepiades planted the epicurean philosophy in medicine, which is easiest to notice in his work *De elementis*, where he characterises medical studies as purely materialistic, and deems all metaphysical views unnecessary in medicine. He introduced such concepts as solidism, which deals with the importance of changes in the solid parts of the body. Despite reviewing and refusing the study included in *Corpus Hippocraticum*, he approved some of it, for example, the belief that blood is made from separate matter particles, and the belief in pneuma and its role in the body. He made some notable observations regarding diagnosis, *inter alia*, differentiating jungle fever from among other instances of high temperature, separating epilepsy from mental illnesses, and pinpointing the difference between pneumonia and pleurisy. Asclepiades believed that all parts of the body are somehow connected. He is also famous in surgery for performing the first tracheotomy in the history.

Having achieved success in both science and work, he believed himself to be an agent of the god Asclepius, and as such a remarkable person. He became highly esteemed and many physicians named themselves after him. His legacy consists of 20 treatises, in which he tried to provide answers for questions medics were frequently asked. Two of his works are polemics with Hippocrates and Erasistratus. None of the 20 works has survived until today in their entirety – only fragments remain, cited by Celsus.

During the last years of Asclepiades's stay in Rome, attracted by the high standards of city life, many groups of medics of different kinds arrived at the capital of the empire: scholars and ignoramuses, charlatans and truly experienced practitioners, most often of Greek provenance. All the respect and fame radiating from Asclepiades has made Greek physicians fashionable, especially since they were better at dealing with contagious diseases from the east (due to having experience with overcoming them). There is a piece of evidence that the Romans have changed their attitude towards doctors – an act, enforced by Caesar in the senate, which granted citizenship to Greek teachers and physicians [4].

From among the masses of foreign doctors, a student of Asclepiades rose above the average – Themison of Laodicea (123–41 BCE). His master's teachings had established a ground firm enough for the creation of a school of medicine, with Themison as its creator. It gained much popularity during the reigns of the few first Roman emperors. Themison passed down the knowledge gained from Asclepiades, which means the theory about pores and atoms. It needs to be emphasised that, despite the unending need for medical assistance, there was no actual medical school, and all the knowledge and experience was gained through immediate practice, with a certain disregard for the lives and health of the patients. Themison used to wonder what should be done to properly introduce new candidates for the medical practice and presented to them his knowledge about how and why particular diseases affect humans. Thus, pathogenesis of medical conditions was born, reliant on the tension of the pores and how narrow they are (*status strictus*), and their relaxation and weakening (*status laxus*). He realised that medicine as a whole could be simplified, and depending on some particular conditions, a reversed healing method could be used: *contraria contrariis curantur*, which means using remedies causing relaxation in case of tension, and substances causing tightening in case of relaxation. A situation where both of those states appear simultaneously was described as *status mixtus*. Acute diseases were to be the result of *status strictus*, and chronic diseases – of *status laxus*. It seemed that the authors of such notion devised a very easy and simple method of identifying and treating illnesses.

Themison has contributed to medicine by distinguishing the stages of illnesses: the incubation (*increscere*), the breakthrough (*consistere*), and the recession. His contemporaries had differing opinions about him. Pliny the Elder referred to him as *summus auctor*, and during the Roman Juvenalia announced that: "Every ill a person, Themison in the Autumn killed" [5].

Themison's successors remained loyal to his method and left it mostly unchanged. Many of them became famous and got employed by the rich Romans, one such example being Menemachus, who suggested using leeches for medical purposes. He also used a special remedy for toothache. Another example is Eudemus, living a bit later, who treated melancholy and rabies,

and has also, by his lady's command, Livia, poisoned her husband, Darus (in 23 CE). Another famous Methodist was Filumenos, a gynaecologist.

The Methodic school has gone through a decisive dilemma: whether to stray in the direction of the Empiric path and follow such notion in practice, or to keep following Themison's superficial theory, risking another dogmatic clash in the process. One of the followers of the latter direction was Thessalus, a merchant's son, who lived between the reign of emperors Nero and Trajan. He arrived at Rome without any prior experience or preparation, and it was his insolence and cheekiness which made him take up medical practice. But he did well regardless and was even able to gain Nero's trust. Thessalus spoke sarcastically about his Dogmatic predecessors and the contemporary Pneumatics. He even dared to discredit Hippocrates. Despite having several patients, he was not satisfied, as what he wanted was a herd of students. Being a dilettante, he preached that the knowledge taught by Methodists can be learned within mere six months. A hundred years later, Galen called all his students "Thessalus's donkeys". Thessalus showed an utter lack of care towards his patients. Galen compared his relationship with the diseased to that between a master and his slaves. That way Thessalus intended to hide his ignorance. As a sign of his conceit may serve letters he ordered to be carved on his rest in place near Via Apia: *Jatronices* – the bane of doctors [3].

During the reign of Trajan and Hadrian, Pneumatics and Eclectics were widely popular in the Roman Empire, whereas the Methodist school has achieved a high status thanks to the medical practice of Soranus of Ephesus. The great Soranus, son of Menander, was born in Phoebe near Ephesus. Having studied in Alexandria, he went to Rome in 100 CE. Although he represented the Methodists, his social status was above that of other members of the school, especially since he had a course in empiricism while being in Egypt. Soranus was a humble man, disregarding his actions and education, also believing that any knowledge regarding anatomy is useless in medical practice. However, at the same time he said, that *It is not a bad thing for a physician to gain such knowledge*.

Soranus published circa 30 medical works in Rome. Unfortunately, they have gone missing. Fragments of only two volumes on gynaecology remained. He was interested in surgery, anatomy, physiology, pathology, and therapy. One of his works, the fragments of which survived in the works of Tertullian, was about the soul. Another work, on acute illnesses, was translated from Greek to Latin by Caelius Aurelianus. Soranus devoted time towards studying Asclepiades's pore theory, fever, medications, treatments, desmurgy, and sprains, as well as fracturing of the bone. He also wrote about reproductive organs, aetiology, and the vocabulary regarding anatomy and physiology. He was interested in medical biography. He highly regarded differential diagnosis and mental gymnastics [6].

One of his notable works, the treatise, *Gynaecology*, was even used by midwives. Despite openly disregarding anatomy, he described the structure, shape, and innervation of the reproductive organs. Soranus studied difficult childbirths, trying to understand what causes them. He advised fellow practitioners to use the vaginal examination in order to verify the position of the foetus. During his career he encountered women with pregnancy in older women, deformed organs, contracted pelvises, cervical thickening, abnormal position of the foetus, or it being dead. He supported the notion of inserting a catheter into the bladders of pregnant women in order to make urination easier and decrease the tension in the bladder, which was, according to him, influencing the position and movement of the foetus. If the position of the foetus was incorrect, it needed to be corrected. He consented to embryotomy only in dramatic circumstances. He believed that the cervix opens during an intercourse and menstruation, and thus promoted plugging it with a greasy substance as a means of contraception. He also stopped the notion that the uterus supposedly travels through the body.

Soranus was also a paediatrician. He advised to feed children boiled honey throughout the first day after birth. A wet nurse should be healthy, between 20 and 40 years old, preferably having already had multiple childbirths herself, which translates to her knowledge and experience in understanding the baby when it cries, how to hold it properly, and above all, how to feed it and to never, ever give it wine. Soranus distinguished some diseases frequent among children: dental problems, angina, eczema, dermatitis, and meningitis. His contemporaries called him *Principes methodicorum* [7].

In the 1<sup>st</sup> century BCE the second Dogmatic School emerged in Rome. The Pneumatic school, as it was named, was trying to base its practice on the Stoic philosophy.

Since Asclepiades, medicine had been under an enormous influence of the Empiricists, and even a greater one of the Methodists, who greatly simplified medical practice and teaching. They held a belief that to treat patients, only minimal theoretical knowledge, and thus superficial medical training, was required. Philosophical principles that contributed to the fame of their most notable predecessors, such as Hippocrates, were disregarded by new practitioners. It was only natural that in such situation a new counter-movement would emerge. This reaction, beneficial from the point of view of the development of and future of medicine, was formulated in a work of one of the Greek physicians, who pondered about the great thinkers of the past, its scholars and philosophers and their “Sun-bright” art of medicine. The author’s intent was to restore the authority of medical sciences, and to this end he referred to the views of a few remaining Dogmatists and also those of the Dogmatic Methodists – the successors of Asclepiades.

In this dire situation medicine was supported by the Stoic philosophy. By no means was that a singular event, because medicine had been previously supported by philosophical knowl-

edge, e.g. during the Hellenistic Age, when its formation had been greatly influenced by Plato and Aristotle, or later, when Asclepiades based his views on the Epicurean philosophy.

In ancient Rome, the practice of medicine was an occupation of freedmen and slaves, majority of them Greek, along with some Egyptians and Jews here and there. Aside from professional practitioners, quack doctors and charlatans often offered their services. Wealthy Romans employed their own domestic physicians, usually slaves. Military units were also assigned a number of doctors. At first, their practice had no legal basis and there were no medical licenses. In 46 BCE Julius Caesar granted Roman citizenship to all free foreigners practicing medicine in the city. In 10 CE Augustus exempted doctors from paying taxes, and in 117 CE Hadrian extended that to public duties and military service. It was only in 200 CE that the emperor Septimus Severus decreed that a permission of the authorities was required in order to practice medicine [8]. Aforementioned pieces of legislation radically changed the social standing of the physicians, who took an interest in the views of the Atomists, the Materialists, and the Epicureans, which were promoted by the science of that time. However, in the new circumstances it was hard to identify with those philosophical trends. For The Romans they were unacceptable. But work of Zeno of Citium, the founder of the Stoic school of philosophy, who lived in the 4<sup>th</sup> century BCE, was different. It was translated by Seneca, who oversimplified it to an extent, and keenly accepted by the educated elite of the Empire [9]. The Stoic philosophy stemmed from the belief that the world is homogeneous (monism), material, and perfect. All things consist of two elements: active and passive, which correspond to Aristotelian matter and form. According to the Stoics, form, or the active element, was a subtle entity, similar to warm air, breath, in other words pneuma that permeates and moulds the passive matter. Pneuma existed in all bodies and thanks to it they became active. Matter and movement existed in various shapes and forms and there was nothing besides them. Every movement was caused by physical and active means; therefore it constituted a purposefully acting pneuma. Thus, material pneuma possessed all the qualities of the Platonian and the Aristotelian soul. Pneuma was characterized by rationality and materiality. The combination of materialism and realism pervaded the world, which was ruled by reason [1]. This was the essence of the Stoics’ views, and those views, pertaining to the whole universe, were used by Pneumatics to describe the human body. In their understanding, health is nothing more than the correct state of pneuma, which they called *tonus* (tension) and which they examined by checking the pulse. The healthy pulse is natural and regular. The eaten food is transported to the liver, where it is processed into blood, which in turn travels to the heart, and with the help of the spleen it cleans the heart from all the undesirable substances. Blood vessels branching from the heart are filled with pneuma, while the veins coming out of the liver carry blood. Each of the sensory organs has a spe-

cific pneuma, e.g. the pneuma of the eyes is delicate, that of the ears is dry, and that of the blood moist and foggy. It is hard to determine when the pneuma has bad qualities, i.e. if it is bad when it is too dry, murky, etc., because different interconnected transition states exist. However, if the pneuma remains in the organ and cannot move, it causes serious ailments. For example, if it remains in the intestines it leads to constipation; in the uterus to hysteria; and when it resides in various other parts of the body it may cause epilepsy. When the pneuma constantly moves through the body, dizziness occurs [10].

The first representative of the Pneumatic school and its mastermind was Athenaeus of Attalia, who lived in Rome under the reign of the emperor Claudius (41–51CE). He founded many schools in the city and strove to create a good program. He wrote more than 30 medical treatises, although all that is left from them are citations in the works of other authors [11].

The Eclectics traced their origins to the Pneumatic school. They had a fresh take on diagnostics and therapy, and considered the pulse to be so particularly important that they based their diagnoses on it. The objective of the therapy was to restore pneuma to its normal state in a slow and sure manner. The Eclectics held an opinion that an illness is a result of hidden facts. These causes were subtly categorized and differentiated. Symptoms informed of the organ that had been affected by the illness. The Eclectics favored combining diverse medical concepts instead of limiting themselves to one consistent system.

The first known Eclectics were Herodotus and Archigenes of Apamea, the pupils of Agathinus of Sparta, who was propagating the teachings of the Pneumatics among the Methodists and the Empiricists. Agathinus was interested in poisons, which he conducted experiments on. Herodotus probably lived and worked in the 1<sup>st</sup> century CE, at the same time as his master. As one of the Eclectics, he keenly pointed out his ties to the Methodists. Fragments of his works survived. We learn from them that Herodotus diagnosed smallpox and considered it to be a separate disease occurring in an epidemical state. He specialized in therapeutic use of baths, among them oil and water baths, and besides those brews, gymnastics, massages, sunbathing and so on.

Archigenes of Apamea was born in Syria. Alexander of Tralles called him *the divine being*, and he received much praise from Galen. He lived in Rome under the reign of Trajan. He possessed a unique spiritual self. Archigenes belonged to the group of wandering physicians. He was known for his great qualities: wisdom and elegance. Among his patients were members of the uppermost Roman classes. He also taught medicine, and knew how to combine the Pneumatic, the Methodist, and the Empirical theory. His scholarly legacy includes works on: pulse, various types of fever, neuroses, diagnostics of acute and chronic diseases, favorable time for surgery, dealing with a bleeding from the uterus, and pharmacology. He practiced gynecology by providing his services to women from wealthy Roman families. He

described leprosy and diphtheria. He prescribed a proper diet, hygiene, bloodletting, herbal emetics, and laxatives; used ligatures to shut off blood vessels, as a result lowering the mortality rate among amputees; and cauterized big, bleeding wounds using red-hot iron. He used a special mirror while examining the uterus and performed surgery on malignant tumors of the uterus and breasts [14].

Another Eclectic, Archigenes of Pergamon performed cupping and bloodletting because he believed that “not much of pneuma is lost” as a result.

Heliodor, also an Eclectic, was a surgeon specializing in castrating slaves. Besides, he carried out trepanations and operated on varices. Later he devoted his attention to the techniques of applying dressings [15].

Leonidas of Alexandria used a rectal speculum to diagnose hemorrhoids and other diseases of the rectum. He also dealt with exotic diseases and recognized filariasis as an endemic disease [16].

There is very little information on the life and medical practice of Rufus of Ephesus, whom some of the writers locate in the time of Plato or Cleopatra. We know he dwelt in Rome during the reign of Trajan, i.e. at the end of the 1<sup>st</sup> century. His treatise *Medical Questions* is a piece of evidence of his long stay in Egypt. Fragments of his works survived in the writings of Galen and several Arab authors. Three treatises have survived to this day: *On Diseases of the Bladder and Kidneys*, *On the Names of the Parts of the Human Body*, and *On Gout*. In his work *Medical Questions*, which is a treatise on symptoms of diseases, Rufus writes about the necessity of being gentle and careful while conducting a medical examination of a patient. His genius view that fever is a defensive mechanism of the organism was confirmed not earlier than 2000 years later. For Rufus of Ephesus, the basis of diagnosis was the examination of the pulse, performed in order to determine whether there are too many heartbeats, any irregularities or other abnormalities. He gained anatomical knowledge by performing autopsies of monkeys; was the first scholar to describe the lens capsule; distinguished between motor and sensory nerves; and wrote pioneering descriptions of leprosy, bubonic plague, erysipelas, and epithelial tumor. He acted carefully when he was treating diseases of the bladder and kidneys, and negated the need to use diuretics, instead advising the use of enemas, compresses, baths, and suppositories. In case of bleeding from wounds he would place ligature, “twist of vessels”, and use cold compresses. He described some surgical procedures, e.g. removal of bladder stones, in great detail. He had a high opinion on the therapeutic role of sexual intercourse, because he believed it erases intrusive thoughts and has a calming effect on the ill person, while being undisputedly the best means to achieve this goal. Sexual intercourse lessened delusions and restored the normal functioning of the mind [17].

Living at the turn of the 2<sup>nd</sup> century CE, Aretaeus of Cappadocia was a great figure in the world of ancient medicine. Despite

paying homage to the Pneumatic school, he stayed true to his own convictions. It could be said he had no ties to any of the contemporary medical schools [18]. His great contribution to medicine was influenced by the Hippocratic spirit. He based his opinions on medical pathology on observation. He thought of health as a balance of solid and liquid parts of the body. According to Aretaeus, pneuma was stored in the heart, and travelled through the body in blood vessels. He considered anomalies of the bodily fluids or the transmutations of pneuma to be the interconnected causes of diseases. He clearly distinguished between the diseases he described, i.e. he differentiated between tuberculosis with hemoptysis, tetanus with opisthosomas, and stroke with hemiplegia. He thought that jaundice is caused by obstruction in the bile duct, and changes in the brain are caused by the crossing of nerves. In case of diabetes he thought that the fluids lingered in the body and urine was diluted, causing loss of weight and collapse of the organism. The disease was accompanied by thirst. He proposed using milk, wine and laxatives to cure the disease. When examining infectious diseases, he meticulously described symptoms of the bubonic plague, diphtheria, diarrhea, leprosy and cholera. In the field of psychiatry, he observed symptoms of persecutory delusion, melancholy, and hypochondria and ascribed them to the mental processes.

Aretaeus's medical views were eclectic: a combination of the Pneumatic, the Methodic, and the Hippocratic teachings. His treatise *De causis et signis acutorum morbum* was permeated with Ionian dialectics and resembled the works of Hippocrates [19].

The culmination of the work of the Greek physicians in Rome was the medical practice and scientific career of Galen, which due to its uniqueness deserves a separate and detailed description.

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## Streszczenie

W okresie hellenistycznym i rzymskim największy wpływ na kształtowanie się medycyny wywarło dwóch filozofów: Platon i Arystoteles. Ich poglądy znalazły swój wyraz w postępowaniu indywidualnym lekarzy oraz prądach medycznych empiryków, sceptyków, dogmatyków, metodyków i innych. Począwszy od I w. p.n.Ch. ciężar działalności medycyny greckiej przemieścił się do Rzymu, w którym pojawili się wybitni medycy w osobach Archagatosa, Asklepiadesa, Temisona, Soranosa, Athenoisa, Archigenesa i innych. W 46 r. p.n.Ch. nadano obywatelstwo rzymskie wszystkim wolnym cudzoziemcom praktykującym w Rzymie, a w pierwszych wiekach cesarstwa zwolniono lekarzy od płacenia podatków oraz wypełniania powinności publicznych.

**Słowa kluczowe:** hellenizm, prądy medyczne na przełomie tysiącleci, lekarze greccy w Rzymie

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