

# Medicine in Ancient Mesopotamia

## Medycyna starożytnej Mezopotamii

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### Article history:

Otrzymano/Received: 05.09.2019

Przyjęto do druku/Accepted:  
15.09.2019

Opublikowano/Publication date:

Październik 2019/October 2019

### Summary

The beginnings of the history of Mesopotamia date back to the middle of the fourth millennium before the birth of the Christ. Various populaces settled on its territory, which formed more or less permanent state organisms, and over the centuries manifested a common cultural and civilizational heritage. Amongst the nations which made an enormous contribution to the development of medicine in Mesopotamia are Babylonians and Assyrians. The evidence of their achievements in medicine is found in the Code of Hammurabi and on clay tablets covered by cuneiform which were discovered in Nippur. In those days medicine was mainly of magical nature.

**Keywords:** history of Mesopotamia, medicine of ancient Mesopotamia, Nippur clay tablets, the Code of Hammurabi

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### Introduction

The oldest cultural centers of Mesopotamia, i.e. the areas lying between the Euphrates and Tigris rivers, were urban clusters with large temple buildings. Their dynamic development coincided with the fourth millennium BC. Initially, the Sumerians were the most active community in this area, who appeared in Mesopotamia as Asiatic populaces around 3300 BC. The Sumerians did not create a unified political formation, but only city-states ruled by priests, gathering administrative, military and judicial power. The basis of the Sumerian economy was agriculture and farming, however, the discovery of a potter's wheel, a wagon wheel, colored glass, and above all bronze had an impact on the flourishing of Sumerian craft and trade. The everyday needs of the inhabitants also required the popularization of the art of writing, thanks to which epics with mythological content have survived to these days, e.g. a poem about Gilgamesh. Around 2,300 BC. the Sumerian states were dominated by the Semitic Akad tribes, which succeeded thanks to a new, flexible weapon – the bow. After two centuries of Semitic domination, the Sumerians regained their independence (around 2100 BC), but soon they succumbed to another military force, the Asiatic Elamites and the Semitic Amorites.

The invasion of the Elamites gave rise to new states in the region: Assyrian and Semitic Mari. The Ancient Assyrian State achieved the greatest power during the reign of Shamshi-Adad (1748–1716) in the second half of the 18th century BC, conquering, among others Mari city. Various nations took part in the battles of those days in the Sumer-Akadu areas: The Amorites

(gathered near Babylon), Elamites, Assyrians, inhabitants of Mari and the people of the city of Babylon. Ultimately, the ruler of Babylon – Hammurabi (1728–1686) gained political advantage, and the Babylonian god Marduk became a symbol of the victory of the Semitic Amorites. Hammurabi devoted his reign to fighting with Assyria, Mari and the Elamites. During the reign of his successors, the Babylonian kingdom weakened, and the surprising expedition of the Hittites, a state created around 1600 BC, conquered, plundered and destroyed the city of Babylon, which then, for about 400 years, was taken over by the Asiatic Kassites (1530–1160); in the middle of the 12th century BC. Babylonia of the Kassites was defeated by the Elamites. At the same time, in northern Mesopotamia, around 1500 BC. the Mitanni State was formed, and the Hurri State in the north of it. In the 15th century BC Mitanni became a local power, making Assyria, Syria and Palestine dependent. The basis of its military strength was a two-wheeled horse cart.

The use of battle carts (chariots) enabled the Hittites to make victorious expeditions, who in the 14th century BC became another military power of the Asia Minor, conquering Mitanni and Syria and fighting with Assyria and Egypt. Around 1200 BC. internal conflicts and invasions of wild tribes, including the Phrygians, who formed their own state, led to the collapse of the Hittite reign and the destruction of their capital – Hattusa.

Around 1400 BC. Assyria succeeded in regaining independence, freeing the country from Mitanni's reign. Population of so-called the Middle Assyrian State, integrated around the figure of the god Assur, was directly subordinated to the king's reign. Belief in a rigorous idol played a huge role in the use of

sophisticated cruelty by the Assyrians, both in the Middle and New State era. Their aggression towards their neighbors was dictated by their desire to gain land and spoils. Iron factor, borrowed from the Hittites, should be considered as a factor that played an important role in Assyria's military successes. In addition, weakening of other Mesopotamia states coincided with the times of intensive Assyrian expansion.

In the 10th and 9th century BC Urartu has grown into a worthy opponent of Assyria. The rulers of this state resided in Tuspa on Lake Wan (eastern area of today's Turkey). In the middle of the 11th century BC the New Assyrian State was formed, reaching the greatest power under Tiglat-Pileser (745–727) reign. Successive kings conquered Syria, Elamite Babylon (648), Israel and dealt the final blow to Urartu, destroying Tuspa. In the 7th century BC the Assyrians even took over Egypt. During Ashurbanipal (668–626) reign, Assyria reached the largest territorial size, but after the monarch's death it weakened. The rebellion of the conquered population, mainly Babylonians allied with the Medes, led to the destruction of the hated power (608). The conquerors' revenge was fierce. Only ruins and ashes remained after Assyria.

Babylonia was released from the reign of Assyria as early as 625 BC, creating the New Babylonian State. During King Nebuchadnezzar (604–562) reign, rebuilt Babylon became a powerful fortress and a rich center of economic life. The same ruler at the beginning of the 6th century BC captured and destroyed Jerusalem, and took the people captive (Babylonian captivity of the Jews). Later kings were weak monarchs. Son of the last Babylonian king, Nabonidus, the biblical Baltazar, known for his famous feast, during which a mysterious hand wrote on the walls of the palace a prophecy of the city's destruction: Mane, Tekel, Fares, was conquered in 539 at Opis by the Persian king Cyrus. Cyrus took over Babylon, thus eliminating the last Semitic state in Mesopotamia.

In the 7th century BC on the territory of the destroyed Phrygian State (today's western part of Turkey) Lydia was formed. The fall of Assyria allowed the Lydians to strengthen and expand their occupation in the east to the border with Media. They also conquered Greek Colonies on the coast of Asia Minor. The proverbial wealth of the Lydian kings in the ancient world attracted Greek writers and artists to the royal court of Sardis. In 585 BC the Medes attacked Lydia, but during the decisive battle on the river Halys, the battle ceased due to the solar eclipse. Thirty years later, the last Lydian king, Croesus, was beaten up at the walls of Sardis by the Persian ruler Cyrus.

Persians, inhabiting the areas of today's Iran, in 600 BC invaded Elam, which after the fall of Assyria became a nation with no ruler, and moved the capital of their state to Susa. In the middle of the 6th century BC, in addition to Lydia and Babylon, they took over Media, creating the Persian-Media monarchy, which under the Cambyses command conquered Egypt in 525. At the turn of the 6th and 5th century BC Persia under Darius I reign

became a universal monarchy in Asia Minor [1]. Its end due to the victories of Alexander of Macedon occurred in the 4th century BC.

## Medicine in Ancient Mesopotamia

Medicine of primitive populaces, and the tribal nations of Mesopotamia and Asia Minor described above should be considered as such, was permeated with empirical as well as magical and religious elements. Therefore, despite the relatively high therapeutic level for the possibilities at the time, the religious factor in the patient-god relationship played an important role in interpreting the causes of the disease, identifying symptoms and undertaking treatment attempts. The view that the influence of ancient gods determines the psychophysical states of the sick gave medicine an appropriate rank, but was also the reason for its limitations. Nevertheless, a link was seen between mental processes and pathological organic lesions that occurred among patients. The populaces of Mesopotamia appreciated the importance of health, and the absence of diseases and suffering associated with it was their basic desire. Most of the religions of that time gave believers hope for an afterlife, to compensate for all the miseries of mortal existence. In contrast, the religion of the populaces of Mesopotamia answered the question of the future of man after death differently; it presented it very pessimistically. The place where the dead went did not guarantee peace and easy life, it was not welcoming and gloomy. This threatening religious omen motivated the desire to be on earth as long as possible among living beings. The Sumerian epic about Gilgamesh expressed the longing of people of those days to immortality, and at the same time stripped them from their hope for eternal life:

*You will never achieve eternal life you are longing for. Only god can bring the breath of death out of the dead and bring them back to life... Gilgamesh will announce the joy to you during the day and at night. Your days and nights will be completely happy and should be filled with singing and dancing ... Put your arm around your woman and experience the pleasure and happiness of love. Only this can be achieved by people, nothing more.*

Sources of information on ancient medicine of Mesopotamia are, first and foremost, numerous clay tablets covered with cuneiform writing. They were excavated in Mesopotamia in various locations, e.g. in the ruins of Sumerian, Assyrian, Babylonian and other cities. A huge collection of several thousand tablets was discovered in Nippur. A significant source of information is the Code of Hammurabi carved into a solid stone block in the 18th century BC, found in Susa in 1902 and now exhibited at the Louvre Museum in Paris. Another group of testimonies are

messages from Greek ancient historians, including Herodotus from the 5th century BC. The archaeological excavations, including amulets, ritual figures and images of gods are also worth to be mentioned [2, 3].

On the basis of the tablets covered by cuneiform we find out about three alleged mechanisms causing diseases. The first cause was related to the direct punishment of the sinner by god. The second, most common one, was a consequence of the god's resignation from defending a man against the demon causing the disease. The third mechanism was a consequence of black magic, through which the evil spirit penetrated the human body and initiated diseases. In all circumstances, the disease was interpreted as a punishment for offending the god and the fact that a spirit of evil or a creature being the result of a sex act of a woman or a man with a demon entered the body. The fundamental relationship in such medical thought was the close relationship between the patient's sin and illness. The belief was that unethical act has bodily consequences. Also, the observed infection of the disease through direct contact with another person was explained by the loss of god's grace. Trying to isolate „unclean” from healthy people, as well as washing the body after contact with a sick person possessed by an evil spirit, the principles of rational hygiene were followed unconsciously.

The task of the Mesopotamia physicians was to determine the disease and determine its treatment methods. It was also necessary to know the cause of the disease, determining the direct or indirect interference of the god. On this basis, the disease was forecast and effective therapy was undertaken. Treatment had the desired effect if the physician-priest, through divination, came into prior contact with the god and predicted his intentions for the future. There were various forms of divination: prophecies based on the behavior of flame and smoke, interpreting astrological horoscopes, assessing the shape of oil patches on the water surface, translating dreams, hepatoscopy, that is looking closely at the liver of a killed animal [4]. The physician-priest leaving the temple and going to the sick's home considered the significance of natural phenomena that he observed, felt and heard in the surrounding nature, e.g. animal sounds, wind noise, cloud shape, bird flight. On this basis, he concluded about the further course of the disease.

Of the aforementioned divination, the most common was a strict ritual of looking at the liver, believing in the identification of the sacrificial animal with the person seeking help. At the beginning of the ceremony, the physician-priest asked the god to reveal his intentions towards the sick through the animal's intestines. The liver was examined in its natural location, trying to determine the relationship of the organ with other abdominal structures, mainly the intestines. Then the organ was removed from the body and subjected to optical examination on all sides. Perceived or presumed lesions in liver appearance were interpreted in the context of the patient's state of health. Hepatoscopy was a superficial vision and did not cause interest in anatomy.

Symptoms of diseases were reflected in texts written on clay tablets. Based on the specified symptoms, we can only assume that the disease concerned organs of the system. So, cough, sputum spitting, chest tightness, hemoptysis, lack of air can be attributed to respiratory diseases. Diarrhea, jaundice, abdominal colic, hemorrhoids were probably signs of gastrointestinal disease. Symptoms on the part of the genitourinary system were characterized by hematuria, dysuria, urethral and bladder pain, and lumbar acute pains. Headaches could suggest a migraine or a serious illness of the nervous system. Sources also mention otolaryngological symptoms, such as earaches and nosebleeds, and odontological ones, mainly toothaches. Very interesting information concerned matters related to childbirth, which was supervised by the Mama or Mami goddess. The goddess of breastfeeding was called Nintud and prayers for the health of the newborn were addressed to her. If the child was not breastfed and died, then the mother was considered as being unfit and, according to Assyrian law, she was punished by cutting her nipple off. Also, the Code of Hammurabi provided for severe penalties for women for terminating pregnancy [5].

As already mentioned, illness was considered the result of sinful behavior and the effect of body indisposition or bodily injury. Therefore, the therapy took on a dichotomous form, that is based on many years of experience. In the first case, the priest-physician tried to appease the offended god through prayer, sacrifice or magic. The strongest god, Marduk, to whom most requests were made, could intervene in a particular matter with other gods, e.g. Shamash and Ishtar. During the prayer all attributes of god's size were emphasized, the patient's health situation and its despair were presented as a sick man.

The sacrifices made were of special importance. First of all, they were a form of penance and were dictated by the hope of atoning the god for the sins committed by the sick. At other times, the sacrificial animal was identified with the sinner. By depriving them of their lives, people were punished, freeing the suffering person from the charge of offenses against the principles of the morality in those days. Various types of domestic animals were sacrificed to the gods, but also wild animals, fruit, grain, clothing, etc. At the sacrifice ceremonies, magical human figurines were prepared, which helped identify the sacrifice made with the patient and provided the patient with the prospect of healing and safety. By resorting to various miraculous treatments as well as spells and orders included in the formula, it was believed that in this way demons would be forced to obey. Magic was divided into white, with the help of which they tried to chase away the evil spirits from the patient and restore the patient's health and black magic, very harmful to people, responsible for the spreading diseases and death. Magic formulas were sometimes prophylactic, others referred to the help of the gods, and others were used during treatment based on rational experience, which the patient's body wanted to be revived and strengthened by. If it was considered that black magic was responsible for the

disease, they tried to neutralize it and weaken its effect. For this purpose, figurines made of flammable or easily melted materials, e.g. plaster, fat, wood, lead, were used, which were identified with the perpetrator of evil by means of spells. While calling out subsequent formulas, an attempt was made to dismiss the curse cast on a man, and the figurines assigned to evil were burned or melted [6].

The information on rational medicine based on many years of experience we also derive from clay tablets. There are no phrases, rather short ones, almost laconic texts, e.g. *Litmus root – a medicine for toothache – to be applied on the tooth*. Based on these descriptions, 250 medicinal plants, 108 animal substances and 120 mineral substances have been identified as components of various medicines. The vegetation ingredients consisted of fruit, i.e. grapes, figs, pomegranates, and also garlic, onions, green peas, cucumbers, head lettuce, deadly nightshade; grains – groats, wheat, millet; spices – fennel, thyme, saffron, chicory, mustard; flowers – rose, myrrh and others. For medicinal purposes, the roots of plants, bark and fruit of trees were also used, including cedar, pine, laurel as well as myrtle and juniper branches. Hellebore, opium, mandrake and hemp complete this list.

Mineral substances were used less frequently in the manufacture of medicines. Pottery flourished in Mesopotamia, and the art of blown glassware and lacquer products was developing. On this basis, it can be assumed that methods of isolating mineral substances and their remelting were also known. These minerals were used to prepare, among others, dermatological pomades and eye drops. The most commonly used chemical elements and compounds in the manufacture of drugs were: sulfur, lead, copper, antimony, arsenic, pyrite, alum, chalk and other [7].

The Mesopotamians attributed magical properties to products of animal origin, which determined their frequent use in medicine. For this reason, there was a great demand for the intestines of animals, mainly lions, foxes, wolves, frogs, gazelles, birds and even insects. Animal excreta, i.e. urine and excrement as well as skin, hair, bones etc. were also used.

The tendency typical to priests-physicians to prescribe many medications should be called polypharmacy. Complicated and containing new substances prescriptions were to always be intended to arouse the patient's respect for knowledge of the physician. Archaeologists have excavated pitchers used to apply medications, primarily made from plants. Another way of taking medicine was to inhale smoke and steam, instillation of eyes and urethra, rub in ointments and insertion of suppositories into the anus.

Little is known about surgery and physiotherapy. Based on sources, it can be concluded that the barber surgeons of that time performed minor surgical procedures, including tooth extraction, bloodletting, abscess incision, removing cataracts. Probably heat and massage treatment was also the domain of the craftsmen [8]. The art of magical healing took the form of

a religious ceremonial whose splendor depended on the patient's social position. In the case of a sick person from the upper social class, a cheerful procession took place. It was led by a physician-priest in a ritual outfit surrounded by people symbolizing good and bad demons. The cortege was followed by a singing choir and a man hitting the cauldron, because it was thought that the loud sounds of this kind of percussion would scare away the evil spirits and make them escape. During the march, magic formulas were recited, significant fragments of which were repeated by present people. If the patient was from the lower social class, the ceremony of magic spells was a very modest spectacle and took place at home. The patient's recovery was celebrated by singing songs.

In the 5th century BC Mesopotamia was visited by the Greek historian Herodotus. While in Babylonia, he observed that *The sick were taken from home to the market because they had no doctors. Passers-by approached the patient, advised them and urged them to do what they did or saw how others did affected by a similar disease. However, they must not silently walk past the sick person without asking them what they suffer from*. Based on the above quotation, it can be assumed that there was no medical profession in Mesopotamia. There were probably no medics in these areas resembling Greek doctors, educated specialists, with course of action set out by knowledge [9]. Researchers of ancient times have determined that doctors in Mesopotamia were divided into three professional groups: medics of limited importance (*azu*), observers or prophets (*baru*), purifiers and exorcists (*ashipu*). Priests-physicians were required to identify the evil spirit who was responsible for the occurrence of the disease and to prepare medicines „energized” by prayer. The priests-physicians had great social authority and enjoyed great respect. The Code of Hammurabi provided for severe punishments for surgical errors of barber surgeons, but placed priests-physicians above the law and all human judgments.

Medical knowledge in Mesopotamia was passed from mouth to mouth. The tablets covered by cuneiform only supported the doctor's memory, being drug lists and divination comments from the liver; they served to consolidate knowledge of people associated with medicine. *The ones possessing knowledge should teach another ones possessing knowledge. Those ones not possessing any knowledge should not read the tablets*.

In subsequent years after the discovery of the Code of Hammurabi, tablets written in cuneiform were found. They were relating to medical issues and were specifying penalties for physical injury [10] e.g. *If a man cuts a lower leg of another man with a tool, they must pay 10 shekels of silver to the injured man*. The text in the Code of Hammurabi is divided into 282 paragraphs, also known as articles. Paragraphs 215 to 240 deal with medical matters that are treated equally to the activities of architects and ship builders. Hence the conclusion that medical art was considered a craft in Babylonia. As already mentioned, the activities of medics-priests were excluded from state jurisdiction. The

provisions of the code referred only to the practices of barber surgeons (*gallabu*), who were subject to the law by performing minor surgical procedures. The paragraphs of the Code of Hammurabi regulated the amount of fees for curing a patient and the types of punishments for therapeutic errors. The amount of fees and penalties provided for barbers depended on the social position of the patient [11].

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## Streszczenie

Początki dziejów Mezopotamii sięgają połowy czwartego tysiąclecia przed narodzeniem Chrystusa. Na jej terenie osiedlały się różne ludy, które tworzyły mniej lub bardziej trwałe organizmy państwowe, a z upływem stuleci przejawiały wspólne dziedzictwo kulturowe i cywilizacyjne. W rozwoju medycyny Mezopotamii najbardziej zasłużyli się Babilończycy i Asyryjczycy, o czym świadczy Kodeks Hammurabiego i gliniane tabliczki pokryte pismem klinowym znalezione w Nippur. Medycyna miała charakter głównie magiczny.

**Słowa kluczowe:** historia Mezopotamii, medycyna starożytnej Mezopotamii, tabliczki z Nippur, Kodeks Hammurabiego

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