

Enki or Ea: The god of medicine in Mesopotamia from the sea**Masoud Zare¹, Tabandeh Heidari Bafghi¹, Hanieh Baneshi¹, Amin Tamadon^{1*}***1. PerciaVista R&D Co. Shiraz, Iran***KEYWORDS**

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ABSTRACT

Enki or Ea. is the name of the god of wisdom, medicine and sea in the Mesopotamia Sumer and Elam. He is the ruler of the freshwater ocean, "Abzu". Enki is represented by the rivers Euphrates and Tigris flowing from his shoulders. He has a bowl in his hand from which water flows. He is associated with his symbolic animals such as fish, goats and turtles. Boats and canes with ram heads are his tools. His special achievement was the creation of man and he is known in various epics as the creator of human beings. In addition, he owns the "ME" destiny tables on which the destinies of the gods and people are written. Enki has been recorded since the early Sumerian period and has been shown in various inscriptions to worship him as the god of fresh water and the god of the moisture of life. His main shrine was "Ayapsu" in the city of "Eridu". Enki, as one of the most important deities in the Mesopotamia, had temples in many cities. As the influence of the city of "Eridu" waned, his main shrine was moved to the city of "Uruk", which is reflected in the legend of "Inana and Enki". The physician in ancient Babylon was called "Asu", which is derived from the Sumerian word "A-zu" and means a man who knows water (or oil). It is related to water prediction with the help of Enki. Enki's role in the medicine of Mesopotamian inscriptions has been repeated. In the legend of "Enki and Ninorsag", the details of a story about medicinal plants, diseases and gods are written. This article reviews Enki's role in Mesopotamian medicine.

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Abbreviations

COVID-19, Coronavirus disease 2019; DMTs, Disease modifying treatments; MS, Multiple sclerosis; SARS-CoV-2, Severe acute respiratory syndrome coronavirus type-2; CNS, Central nervous system; WHO, World health organization; MRI, Magnetic resonance imaging; UK, United Kingdom; IFN, Interferon; GA, Glatiramer acetate; TFNM, Teriflunomide; DMF, Dimethyl fumarate; SP1RM, Sphingosine-1-phosphate receptor modulators; CDC, Centers for disease control and prevention.

Introduction

Based on the early beliefs of mankind about the knowledge and formation of the world, the Sumerians believed that the goddess Nammu was presented as the mother who gave birth to the earth and the sky (1). The earth and the sky were connected in the beginning, a number of gods existed before the separation of the two, and "Enlil" finally caused this separation. The separation of the earth and the sky provided the next step in the creation and formation of existence. In this stage, other gods were created from the mixing of fresh and salty waters, namely "Apso" and "Tiamat", and finally humans, animals and plants were created. According to Sumerian beliefs, the main parts of the world include air, sky, sea, and earth, and four gods named Enlil, Anu, Enki, and Ninhursag are the rulers or clients of these realms, and other phenomena come into existence from them. According to these beliefs, water played an important role in the formation of life and its life-giving properties were known to people (2).

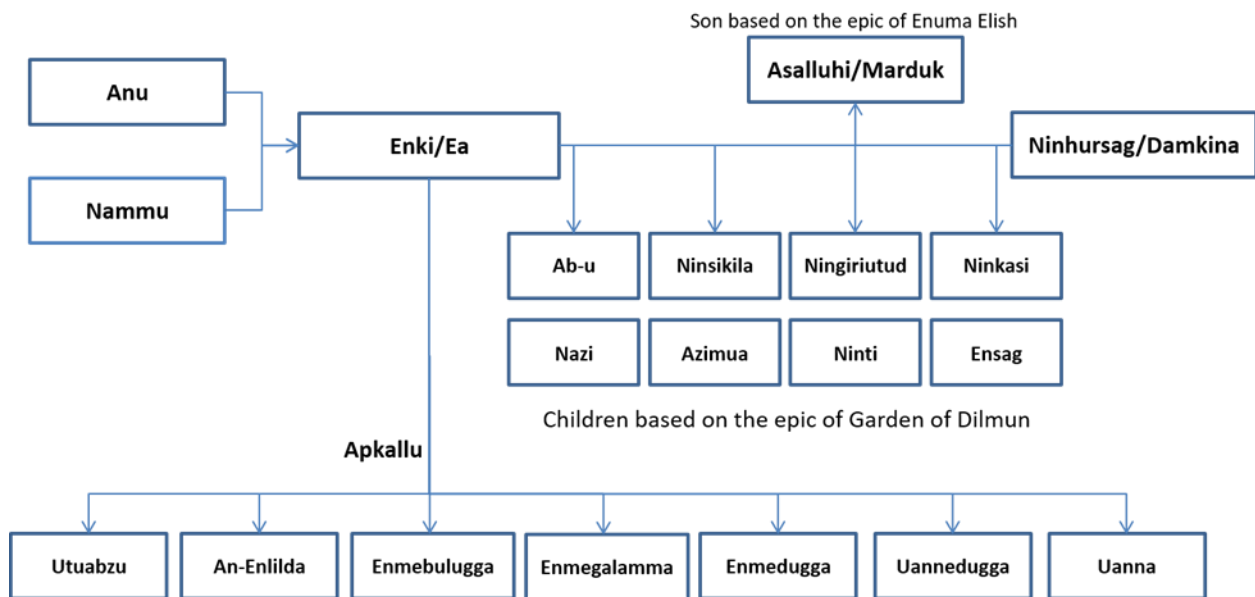
In Mesopotamia civilization, each of the gods and lords of the species, as well as their protectors, have pictorial symbols based on their position and rank in the power structure of the gods. These symbols are usually shown in the form of abstract shapes, special animals, as well as canes and sticks in mythology. One of the most important uses of the pictorial and abstract symbols of these gods and lords of the species has been in amulets and prayers that were made in the form of clay tablets and seals that were made to ward off evil or blessing to agricultural products and livestock. Also, these symbols can be seen in many reliefs next to the figures of gods and late kings of Mesopotamia. In addition, many of the tools and some ornaments left from the Assyrian and Babylonian civilizations contained these pictorial symbols of God (3).

It seems that what is considered a disease is obvious for a person in the modern world, but "disease" is a term that has cultural roots. In the world of modern medicine, the explanation of a disease goes beyond its etiology. In medical anthropology, four reasons are used for etiology: natural, individual, social and supernatural. In Mesopotamia, the etiology of diseases was attributed to external forces (4). Medicine in Mesopotamia was dominated by religion and priests. All diseases were transmitted by gods, demons or evil spirits.

Therefore, it was necessary to constantly propitiate the gods and demons with proper worship such as feeding the spirits of ancestors with offerings and wearing amulets and talismans. Taboos should be known and respected (5). In their life, there was a philosophy of constant fear of an unknown power that was waiting to hurt people. The ancient Mesopotamia were constantly in fear of supernatural forces that could harm them at any moment.

In order to deal with the effects of demons and physical diseases, the psychotherapist or "Ashipu" and the doctor or "Asu" were called to the patient's bedside (6). These two professions were known from the beginning of the third millennium BC in Sumer and later in Babylon, Assyria and the Hittite region. Sometimes they were present together at the head of a patient's bed and sometimes one person had both sides together. In the initial stages of the disease, the psychotherapist was called to read a list of sins committed by the patient. His medical texts included description of symptoms and list of therapeutic drugs. The psychotherapist identified the sins and recited words to cut off the hands of the demons from the patient and used impure processes to cleanse the body, such as enemas, induced vomiting, and incense (7). The doctor also used drugs and substances that had therapeutic uses. The people of Mesopotamia believed that they were surrounded by spirits and demons, which they could deal with by performing appropriate magical methods and receiving prophecies (6, 8, 9).

In order to avoid diseases or cure them, a group of gods was used for help in the Mesopotamian culture. But all the gods were not able to help to the same extent. Among other things, Anu and Enlil were considered to be such distant gods that calling them was fruitless. But Enki, who was later named Ea, was the third person from the trinity of gods of the Mesopotamia, a beloved god close to humans and a lover of people, and in the older ages of the Mesopotamia civilization, he was the one who was constantly ready to help the people. He was the helper of mankind not only against the demons and "bad gods", but also against the anger of Enlil and other gods. Enki was the god of waters and wisdom, the greatest god in medicine and magic, and he was the one who transferred his knowledge to his children and descendants to be his successors in the future. Sometimes Enki was called "Nu-dim-mud" meaning the creator of man and it was believed that he made man from clay (10).



Sometimes he was called "Nin-igi-ku" which means Lord of the holy eyes, meaning no one can escape from him. Enki's intelligent wisdom also corrected the mistakes of other gods when necessary (11). He was sometimes considered the son of Anu, a tough and strong child who was considered the closest of God to man and was the hope of the people when difficulties came to them (12). Figure 1 shows a family tree including Enki's parents, children and creatures. In this review article, the role of Enki or Ea, the god of the Mesopotamia, the god of salty and sweet waters, as the god of healing and salvation of mankind is discussed. Also, Enki's symbology, Enki's role in healing rituals, Enki's influence in other cultures, myths related to Enki about medicine and Enki's role in Sumerian and Babylonian creation are discussed.

Knowing Enki or Ea.

The Sumerian word, Enki, means the creator or fertilizer of the earth, and the Akkadian word, Ea, means the house of water. Enki is one of the main gods of Mesopotamia and according to his official position among the gods, this claim has been confirmed. After Anu and Enlil, he has the third place in the list of the names of gods (13). Since Enki was considered among the great gods as a god who was more available than other gods, His name is well-known among the names of people and the seals (14). The god Enki or Ea, who came out of the seas in the writings of the Babylonian priest Bersus, taught medicine, wisdom, and writing to mankind, and in the field of witchcraft, Enki was considered the reducer of curses and the nullifier of bewitchment (15, 16).

In mythology, Enki is completely connected with the functions of water (17). God is omnipresent and has the properties of purification, fecundity, fertility, healing, life-giving, art, craft and witchcraft (18). He is considered the first architect of the universe, the god of art and the protector of artists and the god of culture (19, 20). Therefore, Enki, while maintaining his excellence and divinity, sometimes deals with issues that affect humans in daily life or is busy with other tasks which are necessary to build civilization. Enki is sometimes considered a god who strives to order the world with his power, resourcefulness and wisdom (21) and even man is created by his suggestion. His special feature is that he works not by force and threat, but by wisdom and tact. He is the source of all secret sciences and knowledge of eternal life.

Enki is the owner of the divine secret (sacred powers), culture and civilization (22). He created civilization for humans and left everyone's destiny to himself. In comparison with other gods, Enki's role in the establishment and survival of natural order is more prominent (23).

Enki and the World Order is one of the longest existing Sumerian narrative poems that has been preserved very well. This poem begins with a hymn in praise of Enki. A part of it is lost and unintelligible, but in general, it must be said that apparently Enki was worshiped as the same god who oversees the universe and responsible for the fertility of the soil, agricultural products and livestock. This hymn continues with almost the same theme, that now Enki praises himself and now he is praised by other gods.

22 Enki or Ea: The god of medicine in...

It is followed by a very incomplete text describing various rites and rituals performed in Enki's "Abzui" temple by the more prominent Sumerian worshipers and priests. The scene changes again to show Enki in his boat as he passes from city to city to "determining the destinies" and exalts each city as much as it is necessary. Then Enki returns after determining of the different lands that formed the Sumerian inhabited world and does the things that are necessary for the fertility and fecundity of the earth (24). The interpretation of this poem is: Enki, the ruler of Abzu, full of glory and might, says authoritatively: My father, the ruler of the world, made me exist in the world; My ancestor, the king of all lands; collected all the orders and gave them to me; I brought craftsmanship and art from Akure, house of Enlil, to my Abzu in Eridu; g. I am the good semen begotten by a wild bull; I am the first child of the son of Anu. I am a great storm coming from the bottomless depths, I am the king of the land; I am the head of the kingdom dynasty, I am the father of the lands; I am the big brother of the gods, the one who brings prosperity to perfection; I am the seal-keeper of heaven and earth; I am the soul and ear of all lands; with Anu the king, on Anus dias I do justice. I am the one who, together with Enlil, determines the destinies on the mountain of wisdom; He left the destiny of the sunrise to me; I am the one whom Ninto cherished well; I am the one who Ninhursag gave him a worthy name; I am the leader of the Ananuku, I am Anu, the first child of holy god. When the lord praised himself; When this great ruler eulogized himself; The Anunnaku stood in to pray and plead: O Lord, who is the leader of crafts and art; You who rule, may you be praised in full glory.

Enki is rooted in the south of Mesopotamia and in the city of Eridu. Eridu is an ancient pre-Sumerian holy place that was located in south of the ancient city of "Ur" (25). Due to its sacred nature, Eridu remained one of the main points of religious and intellectual worship according to the list of the Kingdom of Mesopotamia. Eridu was originally an ancient sacred religious meeting place for the residents of the southern regions of Mesopotamia. Later, this religious place turned into a larger complex and eventually into a city (14). In prehistoric times, Eridu was located by the sea, like Ur, and the waters of Basra Bay and the marshes connected to it, surrounded the city (26).

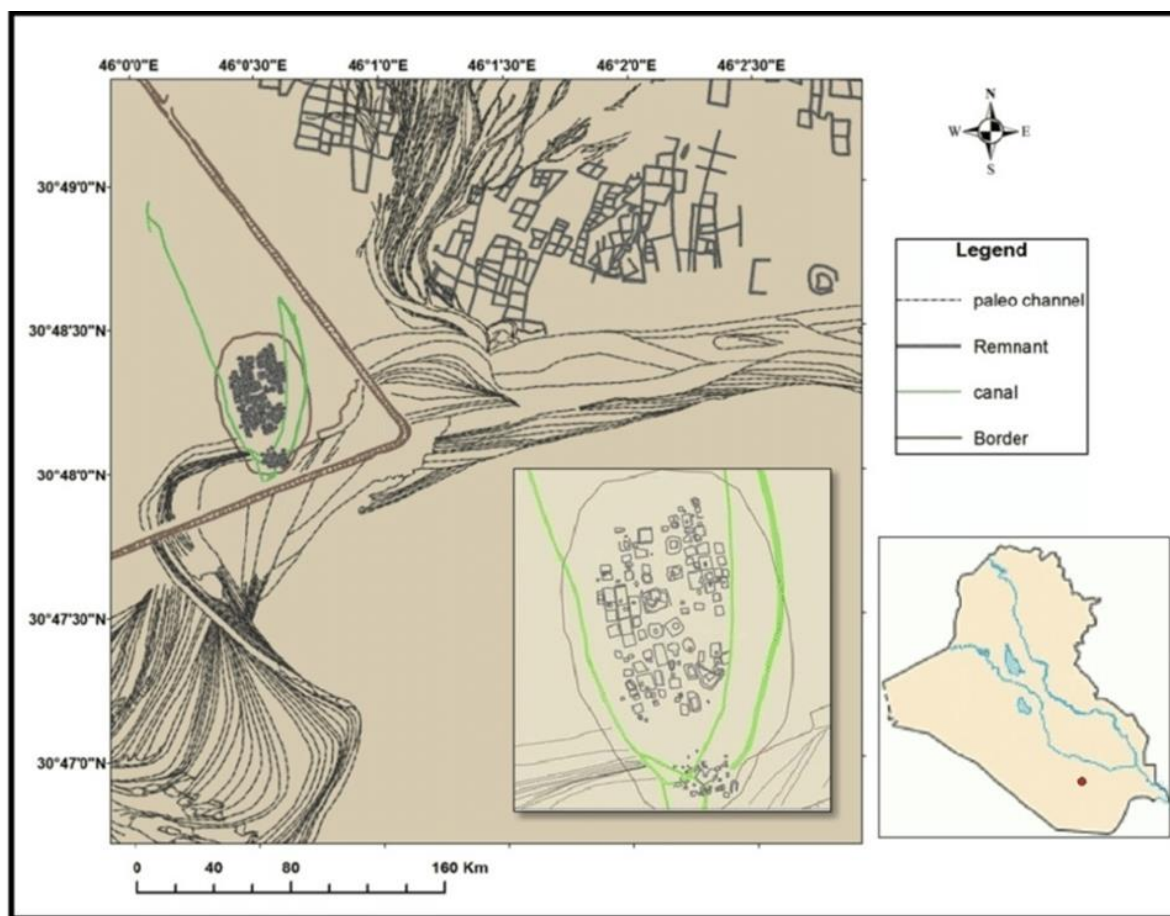
It is not exactly clear when the Gulf retreated from Eridu, but according to the available documents, we know that in the first half of the third millennium BC, during the rule of the Dongis of Ur and Gudea, the ruler of Lagash, the city was still located where the Euphrates flows into the Gulf. It was located at 33 degrees' north latitude. About a century after that, the amount of water in the city decreased and Ornomo, the founder of the third kingdom of Ur, had to dig a canal from the Euphrates through Ur to Eridu. Rawlinsen, after many investigations in the region, considered the remains of the ancient city of Eridu to be in the hills of Abu Shahrain. Tyler also confirmed his theory (27) (Figure 2). At the time being, the remains of the main hill of Abu Shahrain are located at 30° and 49° north latitudes and 46° and 3° east longitudes and in the western in south land of the Euphrates, 40 kilometers west of Nasiriyah, Iraq. In ancient inscriptions, it is also mentioned about a spring called Abzu or sweet water lake, which was the water residence of Enki, the protector god of Eridu. Abzu was underground and above the underworld and they had to pass through it to go to the underworld. Holy water ponds in temple courtyards were also called Apso. Sometimes he is shown sitting on the water, surrounded by water canals (19).

Enki's emblems

Enki's emblem is depicted as a bearded god wearing a horned hat and a long-pleated robe. There are examples of works that show him sitting in a building surrounded by water currents or in a boat moving in the waters of a river or a marsh. This building has been interpreted as Abzu, the temple of Enki in Eridu (Table 1) (28, 29). Enki's special emblem is the streams of water that flow down from his arms, and sometimes there are small fishes that are floating in this flow of water (Table 1).

In this seal, the goddess Inanna is winged with a weapon of blades, and Enki is like conquerors with streams of water flowing from his shoulders (30).

"Kuduro" or boundary stone, which is a kind of stone document that is used to determine the boundaries of lands. These stone documents showed the gift and granting of lands to serfs and vassals by the Kassites in ancient Babylon between the 16th and 12th centuries BC. Kuduros are the only artworks left from the period of the Kassites rule in Babylon and are kept in the Louvre Museum in Paris and the National Museum of Iraq. Symbolic images of Gods were used in Kuduros, who supported the agreement and decision in question and cursed those who break this agreement.



Since Kodoro included many extensive content or images, they were carved on large pieces of stone. These stones were oval or column-like. More than eighty Kuduros have been identified in the time period of around 1370 BC to the 7th century BC. One of the emblems attributed to Enki is the turtle that is shown on these Kuduros. In the Sumerian poem "Ninurta and the Tortoise", when Ninurta finds the inscription of fate, orders, and divine plans stolen from Enki by the bird "Imedgod", she seems reluctant to give them to their rightful owner. So, Enki makes a clay turtle and brings it to life. The turtle digs a hole in the ground and covers it, and Ninurta falls into the hole. The turtle pays no attention to the hero who shouts "Let me out," and Enki turns to Ninurta and says, "What success did your power bring you? Where is your hero now?" Presumably the orders, plans, and inscriptions of the destinies were returned to Enki (Table 1).





Mullus is another symbol with goat-like head and front legs and a fish-like body. This creature was known as Enki's quadruped; This means that Enki would either sit on it or, as the example has been seen, the sitting god would place his feet on mullus.

This animal was in the role of a kind of magical protector that was usually associated with the humanoid fish (Table 1) (31). Such figures also appear in Assyrian worship rituals. This figure was a kind of magical protector that is associated with the humanoid fish in most motifs (19). From the Middle Elamite period, there is a ritual basin made of limestone around which some Mulluses are carved. As it was said, these beasts are Enki's animals that he rides on; since they are engraved on the wall of this pond and because the water of the pond flows on them, this pond is a metaphor for Apzu and Enki's place of residence (Table 1). As mentioned, temple ponds were also called Apzu, and this pond is of the same belief.

The goddesses on both sides of the humanoid fish had quadruped hooves, and their association with the humanoid fish may be a symbol of Enki. Since he, like the fish man, wears a multi-layered hat of God, he has supernatural power and should also be considered as God. On a seal, there is an image of a goddess sitting on a quadruped with a fish under her feet (31).

24 Enki or Ea: The god of medicine in ...

Table 1. Enki's symbols in the works left from the Mesopotamia.

Symbols	Pictures	Description	References
Enki in Abzu		Utu and Ninurta climb the ziggurat stairs to visit Enki at home in Eridu in the Abzu. Akkadian seal, Baghdad, Iraq Museum	(78)
Enki with the flow of two rivers		The god Enki and his minister. Izimu, the two-faced minister, were placed on the right. Shamesh, the God of the sun, rising from the eastern mountains in the morning, Ishtar (Sumerian: Inanna), the goddess of the morning star, and (far left) Ninurta, the God of the storm, are positioned with their bow and lion. 2200 to 2300 BC. "The Cylinder of Adda" (B.M. 89115), The British Museum	(78)
Turtle		A Babylonian boundary stone (kodoro) showing a turtle, which was a symbol of Enki. 1100 1125 BC. British Museum.	(79)
Goatfish		Susa limestone cultual tank, 12th century BC, with the shape of a goatfish, domain of the god Ea, The Louvre Museum, Middle Elamite period (c. 1500 BC – 1100 BC).	(80)

Enki and the Apkals

Apkalu in Akkadian and Abgal in Sumerian are the seven demigod sages who are said to have been created by the god Enki to establish and transmit culture and civilization to mankind (32) (Table 2). They were priests of Enki and served as advisors or sages to the first kings or rulers of Mesopotamia before the great storm (33). The antiquity of medical prescriptions is attested by the ancient oral tradition through these seven Apkals or seven sages (34). Divine commands, industries and art have been referred to them. They have been respected as Elohim geniuses who had advanced scientific intelligence (32). They are depicted as men with the head of a lion and an eagle or the head of a fish that emerged from the fresh water of Abzu. In some cases, they have a human figure in which an ax can be seen in one hand held upwards and a dagger or mace in the other hand. These seven protective sages have been seen with other images such as humans in fish skins, winged figures with the faces of birds and also as figures with lion-like faces (19). Usually, they either have fish bottoms or are dressed in fish-like clothes. They are mentioned as Dajon in the Torah. In the most prestigious museums of the world, you can see pictures of Apkalu, who usually have a purifying pine fruit in one hand (mullilu) and a bucket in the other hand (bandaddu). The names of Apkalu are found in the inscription of the prison house (Bīt Meseri) and the inscription of Uruk (Uruk).

Uan: Who has completed the maps of heaven and earth.

Uandugga: He is given a wide understanding.

Enmedugga: For whom a good destiny has been issued.

Enmegamma: who was born in a house.

Ennebulugga: that grew up in a pasture.

Anenlilda: The purifying priest of Eridu.

Utuabzu: who ascended to heaven.

A sign of Enki in the bronze plate of Pezzo

The bronze plate protecting patients called "Pezzo" belongs to the modern Babylonian period of Mesopotamia civilization, which had the function of a talisman or amulet (Figure 3).







Figure 3. Bronze plates of Lamashtu and Pazuzu, several Mesopotamian gods or creatures to ward off evil spirits. Iraq. 9th to 7th century BC (with permission from the publisher) (77).

An amulet or talisman in Mesopotamia culture was a natural or artificial material in the form of a seal, bronze plate or necklace, which was known to have magical protective powers in attracting good fortune and warding off evil spirits, or both. These amulets are either with the person or installed in a place that requires a magical effect. Apparently, the use of these items was not exclusive to a certain class of people; So that the Neo-Assyrian kings also wore necklaces with small metal amulets that were a symbol of the gods (19). Pezzo has been widely used among the people of Mesopotamia, especially women, and it has been found in Mesopotamia in various forms, such as a small metal statue of Pezzo's personality or a necklace with a small stone or metal Pezzo head, as well as pictorial inscriptions. Pezzo's amulet bronze plaque, of which there are several examples, has been hung in the entrance frames of houses as protection; The main theme of this bronze plaque is the rejection of the disease demon, "Lamashtu", to the underworld by Pezzo (35). Considering the importance of the two characters Pezzo and Lamashtu in this bronze plaque, we will have a brief introduction of them at first.

26 Enki or Ea: The god of medicine in ...

Table 2. The Apkals, the demigod sages created by Enki and the site(s) where the paintings were discovered.

Apkallu type	Pictures	Discovery site	References
Apkallu fish		The temple of God Ninurta in the Assyrian city of Kalhu (nowadays it is called Nimrud), during the reign of King Ashurnasirpal II. 883-859 BC.	(81)
Apkallu fish		Unbaked clay fish-cloaked 'apkallu' figurine. They found in Nineveh and probably belonging to the reign of King Sennacherib 704-681 BC.	(82)
Apkallu eagle		From the North-West Palace of Ashurnasirpal II at Nimrud, Iraq, Neo-Assyrian period, 865-850 BCE. The British Museum, London	(83)
Apkallu man		Palace of Ashurnasirpal II, Nimrud, Iraq, 883-859 BC.	(82)

Pezzo is one of the few gods of Mesopotamia who had multiple roles in different periods. He was originally an Assyrian Babylonian demon god in the first millennium BC, described as having a relatively dog-like face and unnaturally bulging eyes, a scaly body, with a snake-headed penis, bird-like claws, and winged. Unlike the described face of him, it seems that in New Babylon, Pezzo has assumed the role of protector and benefactor (36). Of course, Pezzo's protective role was not the same in different periods and was accompanied by changes; So, sometimes he is known as a protector against damaging winds, and sometimes, like the mentioned bronze plaque, he confronts Lamashtu and protects pregnant women or new mothers. But, it seems, the icon of this god has not changed in different periods. For example, the combination of bird-shaped wings and claws, which is a part of the various combinations of the demons in Mesopotamia culture and expresses a relationship with death and the underworld, is still stable in the later forms of this god, who has assumed a benevolent role (19).

Lamashtu, the daughter of Anu, is probably known as the goddess who was at the head of the evil demons. Unlike other Mesopotamia demons, Lamashtu only acts according to the orders of the gods. The main victims of Lamashtu were fetuses or newborn babies, and miscarriages and infant deaths are both attributed to her. When she enters the house of a pregnant woman, he tries to touch the woman's stomach seven times in order to kill the fetus or to snatch an infant from its nanny (19). Of course, in some of these bronze plaques, instead of a pregnant woman, a man is seen in bed, which shows the other side of Lamashtu, as a disease carrier. In the Mesopotamia mythological narratives, Lamashtu is described as follows: a female creature with a lion's head, donkey's teeth, naked breasts, a hairy body, stained hands, long fingers and long nails, a pig and a puppy are sucking milk from her breasts and she holds snakes in her hands. She also has his own animal, the donkey, like other gods and goddesses of the Mesopotamia, and travels the underworld by means of a river boat (19).

The Pezzo bronze plaque is 133 mm high and made of bronze (Figure 3). The main space of this bronze plate is divided into six parts. In the highest row, there are symbolic signs of the main gods of the Mesopotamia civilization; probably, the writer of the bronze plaque requests their support to protect the patient.

In another row of Pezzo's bronze plaques, seven Apkals with animal heads and human figures are seen, who play the role of protective guards. In the later mythology of the Mesopotamia, these creatures are, in a way, the pictorial symbols of the lords and sub-protectors. In all cases, the upward position of one of the hands has been preserved. The middle row of the bronze plaque shows the patient lying on the bed and the figures with fish body are placed on both sides and they are nursing him. Beside them, the symbolic figures of three lords and sub-guards can be seen. In this row, there are fish-like bodies in the form of bearded humans, with a fish-shaped head passing through the gap between the head and the top of the face, as well as the full body of a fish, complete with back and tail fins, hanging from its back. The presence of these figures in Mesopotamia art became very popular in the Neo-Babylonian and Neo-Assyrian periods and it seems that they were, in a way, the symbol of the cleansing and protective priests (19).

In the bottom and last three rows of the bronze plaque, the demonic goddess Lamashtu, whose image is compatible with her descriptions presented in legends and mythological texts, with the threat of Pezzo, along with various offerings and by boat to the hellish house she returns to the underworld. The visualization of the underworld here is indicated by the presence of several fish in the last and lowest row in the bronze plaque.

Enki from Babylonian culture to Achaemenid

Bersus is a Babylonian priest who lived during the life of Alexander and he has collected ancient stories. "Oannes" is a term used by Brusus to refer to a creature that is a fish-man, and face is like human and a fish head drawn on his scalp and the full body of a fish hanging from the back, and it is completed with caudal and dorsal fins. For the first time Oannes occurs in the art of the Kassite period, and then it is transferred to Assyria and becomes popular in the art of the Neo-Assyrian and Neo-Babylonian periods. This figure was copied from the Assyrian palace sculpture in the early Persian period. Bersous says about the story of Oannes: The people of Babylon were deprived of civilization in ancient times, a strange creature whose body was half human and half fish, named Oannes, came out of the sea and taught people writing and manners for life, agriculture and science. This strange creature, or God, spends his life in the water at nights and lives on land during the days. He and his followers guided the people for 691,300 years, and after that, the great flood of Noah destroyed that dynasty (37).



28 Enki or Ea: The god of medicine in ...

The name Oannes is clearly the Babylonian name Uan, one of the seven sages who were known as one of the Apkals of Enki (Table 3). According to the Kuara temple hymn, all seven sages lived in Eridu city. However, the name and order of their appearance is different in different sources.

In the writings of Bersus, the first sage, Oannes, is originally Adapa and is seen as the son of Enki. Scholars now disagree on this issue, and of course they have their reasons, part of which is the result of the original legend after the Akkadians learned the Sumerians and their beliefs. Throughout the Mesopotamia, Apkalo appears widely in different forms. In the reliefs, humanoid, winged, bird and fish figures can be recognized (38).

When Elam collapsed and the Achaemenid reached the Persian Gulf, the Persians faced a sea that until then had no symbol in their religious beliefs. Therefore, they bowed before the majesty of the sea, and to praise it, just as "Anahita" the god of water who was adopted from the inhabitants of Mesopotamia, they also chose Oannes from the ancient myths of the Mesopotamia in their religious campaign, and the symbol of Oannes in along with other gods, it decorates the palace of Cyrus in Pasargad (Table 3). Valuable seals from the royal road between Persepolis and Susa have been discovered in the chambers in the north of Persepolis's rampart, and among these valuable seals, a fish-man and a fish-goat, which are symbols of the god Enki, can be seen (Table 3).

Table 3. Signs and names of Enki in Achaemenid culture

Enki's name	Pictures	Discovery site	References
Fish-man		Remains of some figures on the frame of the left side of the southeast gate, Pasargadae palace.	(84)
Goat-fish		An Achaemenes carnelian cylinder seal, circa 6th century b.c. Engraved with the "Tamers of the Goat-fish," the two genii each wearing a plumed tiara and holding the horns of a goat-fish, a slender stand between their horned heads. A linear design, a combination of a flat seal from Persepolis, in which a person with a raised hand is standing in front of a fish goat that is placed on a pillar.	(85)

Enki in Mesopotamia medical myths

Enki and Ninhursag

The main characters of this myth are the god Enki and the goddess Ninhursag, who is the mother earth. The myth of Enki and Ninhursag begins with the description of "Dilmun" and it is mentioned as a bright and pure place, a place where animals do not harm each other and there is no disease or elderliness. The only thing that Dilmun doesn't have is fresh water, which Enki provides at Ninhursag's request. From the union of Enki and Ninhursag, "Ninsar" or "Nin Mo" the goddess of plants was born. According to this myth, the pregnancy period of Ninhursag lasts for nine days, each day is equal to one month of human pregnancy. Then Enki impregnates his daughter Ninsar and the goddess "Ninkurra" is born from her.

Ninkurra, in turn, becomes pregnant by Enki and gives birth to the goddess "Uttu", who is also called the goddess of plants, which are used in medicine (Katz, 2008). In the part related to the plants in the Sumerian myth, there is a scene where the eight sacred plants belong to Ninhursag, which she created in Dilmun from three generations of women, but Enki wants to eat these eight sacred plants, which is described in Sumerian literature.

Enki looks around in the meadow; Enki says to his minister "Isimud": I command; I want to find out what is this plant? What plant is this? And his minister answers: My king, this plant is a tree, he cut the plant. Enki eats the plant. My king picks the honey plant. Enki eats the plant; my king, the wild plant by the roadside; He takes the plant, Enki eats the plant.

The text continues until Enki eats all eight sacred herbs. Here Ninhursag gets angry and upset and curses Enki to death and leaves the scene. The eight main organs of Enki's body become sick and Enki falls to the bed of serious illness. Eventually, Enlil, the king of the gods, succeeds to bring Ninhursag to Enki, and she is the only one who can cure Enki's serious illness.

Honey plant is the literal translation of the Sumerian term u_2-lal_3 , which can also be translated as sweet plant. There is no indication of what plant or plants are designated by this descriptive name. But there is evidence about its use. Sweet plant or honey plant was known as the favorite food for fishes, i.e., carp, and as plants where carp hid from their natural enemies in the water.

In addition, it seemed that sweet plant was related to fertility and the image of carp fattened with this plant entered the royal sexual culture of Sumer (39).

Enki and Inanna

In a part of the epic of Enki and "Inanna", it is stated that all the holy orders are stolen from Enki by Inanna, she wants to establish her own ritual in Uruk instead of Eridu. Although Enki sends several messengers to Uruk, Enki finally has to accept the transfer of divine powers from Eridu to Uruk. But Inanna complains to Enki that all her sisters have been given special duties, but she has not benefited from these powers. In response, Enki explains to her that all feminine powers and characteristics, as well as control over gender roles, had already been assigned to her. Now he will give her the power of war, destruction, chaos and lamentation (40). Inanna, like other great gods, is both terrifying and encouraging. She covers a wide spectrum from sexual relations, maternal and conjugal affection to predatory aggression (41, 42). The most prominent hero in Sumerian love compositions is the goddess Inanna (40). In Mesopotamia, women and men worshiped the goddess Inanna for her strength, fertility and sexual power (43).

Enki and Marduk

Marduk is one of the ancient gods of the Babylonian civilization. In the Babylonian civilization, Marduk is considered as the god of fertility and creation (44). During the Hammurabi period, he was considered as the protector of Babylon (45). Marduk is the son of Enki. Marduk is derived from the Sumerian root "Utu", the sun god. Ancient written sources mention his unique healing power and healing art (46). Marduk together with the goddess "Gula" knew how to revive the dead (47).

Also, the Sumerian-Akkadian myths made him the patron of irrigation, without which the economic prosperity of Middle Eastern cities was impossible. In this regard, Marduk was considered the giver of prosperity and peace. His cult reached its peak in the 7th to 6th century BC, when the Sumerians themselves had long disappeared from the historical stage and their language was forgotten (48).

30 Enki or Ea: The god of medicine in ...

In the ancient Mesopotamia, diseases were often treated by performing healing ceremonies in which priests played a special role. Some of the healing ceremonies are addressed to the famous word that is taken from the conversation between "Marduk" and Ea. The scenario described in the Marduk-Ea dialogue was often performed as a ritual drama, where the priests played the role of the god Marduk (49). This healing word called the Marduk-Ea spell in ancient Mesopotamia is unique in the history of medicine due to its use for approximately 3000 years. Its Sumerian version, called Enki-"Asalluhi", is known from the early period of the Sumerian dynasty (50). The oldest cuneiform manuscripts with this type of content were found in the ancient cities of "Fara" and "Ebla", which date back to the middle of the third millennium BC (51). The magical narrative of Marduk-Ea consists of a magical dialogue between the major and minor deities that are present in most Sumerian versions of Enki-Asalluhi. In the Akkadian translations, the names of the two gods have been updated according to Babylonian priorities. Therefore, the Akkadian type is called the Marduk-Ea dialogue (7).

The narrative structure of this type of epode describes the psychological relationship between the patient and the doctor (52). This magical composition is highly structured, always consisting of six parts, which can also be grouped in pairs, and includes three main parts: the problem, the dialogue, and the ritual solution. These six components are as follows:

- 1- Description of an unhappiness or a demonic attack, the cause of a health problem.
- 2- The god of magic Asalluhi or Marduk becomes aware of the situation.
- 3- The god of magic goes to see the god of wisdom Enki or Ea and describes to him the problem situation which he found. In some texts, a small god sends a message instead of him.
- 4- The god of magic by saying: I don't know what to do; He wants advice.
- 5- The god of wisdom Enki assures that the little god Marduk is a scientist like himself and says: What I know, you also know.
- 6- The god of wisdom gives him ritual instructions to follow and says: Go my son Asalluhi or Marduk; with these proceedings, the health problem will be solved.

Enki and the tooth worm saga

The Babylonians believed that the various diseases that the inhabitants of the delta were exposed to were the result of the attacks of evil spirits or due to the malice of sorcerers and conjurers. Therefore, along with the use of known treatments for physical ailments, one or more spells were recited. At the end of these spells, it is stated that after performing the prescribed treatments, it should be recited three times on the patient (53). In the ancient Mesopotamia, there was a belief that dental problems were caused by worms, which are called "Tûltu" in the Akkadian language. A lot of information about this tooth worm has been written on cuneiform inscriptions in Ashurbanipal's library. Ashurbanipal's collection of manuscripts contains a medical manual called Nineveh Medical Encyclopedia. Myths and magical practices from the encyclopedia describe the connection between tooth decay and worms (54).

A part of the translation of this inscription related to the epic of Enki and the tooth worm begins like this. After Anu created the sky, the sky created the earth, the earth created the rivers, the rivers created the waterways, the waterways created the swamp, and the swamp created the worm, this worm crying and shedding tears went to Shamsh (sun god) and Ea and asked them what they would give him to eat, to destroy. Those gods give him the fruit, but the worm asks for a human tooth. Then a magic word is said to cure toothache. Now, if you have said such a thing, O worm, may Ea destroy you with his powerful hand (55).

Enki and Lamashtu

Enki is the god of white magic and healing arts. Qadishtu in Babylonian is usually referred to adult women who live alone and act as midwives for their care among others. In the case of Lamashtu, the epithet "Qadistu of her divine brothers" indicates the midwifery role of Lamashtu, and she learned this art from Enki (56).

The role of Enki in the myths of human creation

Enki and Ninmah

The text of the epic of Enki and "Ninmah" has not been completely preserved and it has been reconstructed based on some manuscripts of Ur III and a bilingual Neo-Assyrian version. The text begins with this introduction that gods were born and the process of creating other gods took place as a result of marriages between gods and goddesses.

Each god has a certain duty to keep and irrigate the earth well. Some of the gods carry the basket and the great gods supervise. But hard work does not suit them at all and they complain loudly to Enki that as a result of his knowledge, it was thought that Enki would help them. It seems that Enki is the only god who is not working and he fell into a deep sleep in Apzu. Nemo, the mother goddess, decides to wake up Enki and tells him that he must arise and create mankind.

Enki wakes up, but leaves it to "Namwa" and tells this goddess to take some of Apzu's fertile clay and shape it with the help of some helpers. Ninmah is one of these colleagues, her duty is to impose the difficult task on mankind. After some missing in the text, we see that the gods participate in a feast and Enki is praised for his knowledge in the creation of mankind. Enki and Ninmah drink more than others and get drunk. Ninmah has a sense of competition and suggests that other creatures be created. Enki accepts but insists on deciding their fate himself.

Ninmah starts to work and seven humans are created, all of whom suffer from a defect (Table 4). It is difficult to understand the nature of their defects. It seems that Ninmah first created a person who could not bend his wrist and grasp anything, and was unable to use his hands to hold anything, and so Enki assigned him to some kind of official court work (57, 58). The second one was created with visual impairment, probably blind, but he should be the king's singer (57). The third one had a leg disability, but Enki also made a good destiny for him and gave him the profession of metalworking (silversmithing). The fourth had a cognitive disability, which had mental problems, and Enki assigned him to some kind of official court work (57). The fifth was not disabled, but he had a disease such as sperm secretion or urinary incontinence, and a social role was not defined for him, but his disease was treated (57).

The sixth person is a barren person and has the function of a priest in the shrine and a place is assigned to him (57). The last creature lacks genital organs, and Enki elevates him to an official position in Enki's temple (57).

Among these seven people who were sick by the goddess of fate, only one person was a woman. Another one was genderless and the rest were male. Among these seven people, only the fourth person did not have any physical defect or disease. This person had a mental problem which was described in Sumerian as "Lulil " or in Akkadian as "Lilu". The number of people with physical disabilities is four, including those without gender. The other two people, the infertile woman and the man with genital problems, are different. It is significant for the social and cultural norms of Mesopotamia that female infertility and male genital problems are mentioned along with people with obvious disabilities. The details of these disabilities and diseases have not been explained medically. There is no information about whether these people were disabled until their death or about the extent of their paralysis, lameness or blindness. However, note that except for one of them, there is no cure for them with medical or magical methods, including surgical procedures. Their social roles, given by Enki, proved that they were sufficient to continue life without medical treatment. In addition, from the medical point of view, it was impossible to improve permanent mental and physical disabilities at that time. Although some prescriptions have been presented for the treatment of eye diseases such as blindness in Mesopotamia (59). It can be assumed that such references did not refer to permanent or complete blindness.

Table 4. The creation of mankind by Enki and the Ninmah and the diseases they had and the social roles given to them by Enki.

Disease	Inability	Gender	social role
Hand paralysis	Physical	Male	Service to the king
Visual impairment	Physical	Male	Service to the king (Musician)
Leg paralysis	Physical	Male	Silver work
Misunderstanding	Mental	Male	Service to the king
Gonorrhea	Physical	Male	Has no special social role
Infertility	Physical	Female	Temple priest
Eunuch	Physical	Uncertain	Service to the king
premature fetus	Physical	Uncertain	Enki temple priest

32 Enki or Ea: The god of medicine in ...

It was observed that only one of these people, created by the goddess, was healed by Enki. Unlike others, his fate was to get rid of the disease with treatment (33). Enki did not consider any social and economic role for this person. Since being in the community with his disease was undesirable, his treatment was prioritized (60). This was a man who had problems with his genitals. Some researchers claim that this disease was related to urinary incontinence (33). Others associate it with sperm secretion (21). It is a well-known fact that unpleasant secretions from the genital organs are symptoms of a specific disease. This disease, which was healed by God using holy or blessed water, was probably gonorrhea. Similar records that correspond to the symptoms of this disease, both in men and in women that are sexually transmitted, have been mentioned in the medical texts (61).

The most important symptom of this disease was frequent discharge from the genitals. This is not urine or semen. However, it is condensed in the form of a liquid, sometimes greenish yellow and sometimes plain water. A person suffering from this disease must urinate regularly and feel pain while urinating. For women, it can be transferred to the child during childbirth and damage the child's vision. In addition, if not treated, it can cause infertility in both sexes (62). Since it can be transmitted by intercourse, it can infect many people in the community. Therefore, it is necessary to treat this disease, because it threatens not only the person but also his wife and close relatives. Considering that Enki provided the integration of the society by granting various statuses to disabled and sick people, the motivation to cure this disease was probably the contagiousness of this disease and the threat to the society. Moreover, the next person created by the goddess after this person was a barren woman. This was significant from a textual point of view considering his mention of a possible gonorrhea man.

Another person who did not need Enki's healing was the barren woman. There were medical, magical and herbal prescriptions to cure such problems in ancient Mesopotamia (63). However, instead of improving her, Enki sent her to a women's house (62), granting her a social role like other disabled people. Infertility, which was apparently not medically evident, can occur in both sexes. However, this was mostly related to women mentioned in ancient Mesopotamia sources. The main diagnosis in medical texts for this disease is inability to conceive.

But Enki's role changed with Ninmah. He creates mankind and Ninmah determines destinies. The text here is almost unintelligible. Enki creates two creatures, one seems to be a sick woman named "Omul" from Sumerian "U-mu-ul" U-mu-ul meaning my day is far away (64). She is sick and suffering from headache and her eyes, neck, heart, lungs and intestines are damaged. She cannot eat and her arms and legs are weak and she cannot walk (33). Now Enki approaches Ninmah and asks this goddess to make a good destiny for Umol. Ninmah asks her questions, but she is unable to answer. Ninmah brings bread, but she cannot stretch out his hands to take it. Ninmah declares that he cannot do anything for this creature. The human that you created is neither alive nor dead, and I am not able to raise him from the earth.

Enki taunts Ninmah that she has no place in determining a good destiny for the people he has created, and here again the text is damaged and, apparently, it makes Ninmah angry, Ninmah curses him and says: On earth she will not stay in this way, it limits her to the underground areas of Apzu (33). Enki agrees that Ninmah's word is unchangeable and gives her more advice. Ninmah should hold Omul, who is probably the first child, on her lap. Ninmah's actions should be prevented, her house should be built. The final phrase apparently summarizes the creation of human beings and the increase of the population explains their duties towards the gods.

Enki and Ninthi

After the Sumerian god Enki ate eight plants belonging to his wife, the goddess Ninhursag, she cursed him so that eight parts of his body became ill. When he was nearly dead, the gods urged Ninhursag to help him, and she created the eight healing goddesses. The goddess who healed Enki's rib was Ninthi, her name means lady of the rib and lady of life. This Sumerian legend probably influenced the Hebrew story of the Jewish Bible that explains the creation of Eve from Adam's rib (65).

The myth of the sentient ether

"Sentient ether" means immeasurably wise (66). This myth begins with the gods doing all the hard work and digging canals and cleaning them, even though they don't like it. After 3600 years, they come to the conclusion that they have worked enough (66). So, they decide to dethrone Enlil, the king of the gods. They stop working and burn their tools.

It seems that finally Anu and EA intervene and the negotiation between the parties begins. In this negotiation, a decision is made to create humans so that the gods are exempted from work (67). In the Sentient ether myth, man is created by "Mami", the mother goddess, with the help of the god Ea by mixing clay with the blood of a god who was killed for this purpose (68). In this way, seven men and seven women are created in this myth. In this process, fourteen "she suru" which means womb or womb in Akkadian rush to the help to the mother goddess, who during a period of ten months, each of them had the task of shaping or preparing one of the clay figurines. Finally, in order to complete the shape and image of the clay figures, EA helps to mix mud and blood into the mami, because this mixture must be kneaded and prepared in advance for molding and solidification (19).

The myth of Enuma Elish

The sixth inscription of the "Enuma Elish" myth describes the creation of man (69). In this myth, man exists to be the servant of the gods and their helper in ruling their territory (70). Marduk, the mythological hero in Babylonian form, was created by Ea. He intends to perform miracles and talks to EA about his plan: let me mix the blood, and create the bones as well. Let me create the first human, his name will be human (66).

After the great battle between Marduk and the god of the salt water ocean, "Tiamat", the gods who were on the front of Tiamat were defeated and imprisoned, waiting for their punishment. But Marduk wants only one person to be sacrificed. So, they will all be pardoned, on the condition that they say who ignited the fire of war to start the battle. Everyone took only one name: Kingo. So, Ea cut Kingo's veins and created the first human by mixing God's blood with soil (71). In Mesopotamia mythology, blood is considered to be the origin of humans (72).

The myth of Gilgamesh

Unable to accept his human fate, Gilgamesh, the king of the city of Ur, embarked on a final heroic journey to discover the secret of immortality. Now he puts all his courage, strength, and martial skills into his last heroic quest for immortality. He was willing to endure any hardship, face any enemy, overcome any obstacle, and travel to the ends of the earth and even beyond to find the secret of immortality.

In his youth, Gilgamesh was told the story of an immortal couple who lived on the other side of the world in a place far from the reach of ordinary humans. This couple had survived the great storm that had swept the entire earth at one time and destroyed all living things. The couple were carried over the waves in a ship according to divine instructions that had previously been given to them by Enki, the god of water and wisdom. When the flood receded, they began a new life for themselves and for all the plants and animals they had brought with them on their giant ship. Eventually the gods granted them immortal life and allowed them to live on an island of immortal life just beyond the borders of mortal land. Gilgamesh devised a plan to reach this remote island to learn the secret of eternal life. After many terrible adventures, the young king reached its shores and met the Babylonian Noah, who in the epic is called "Utnapeshtim" (73).

"Utnapeshtim" means the one who found life. Their Sumerian equivalent is "Ziusudra" meaning long life (74).

Conclusion

According to myths and written works, pictures and inscriptions of the Mesopotamia, Enki or Ea was the most important god in creation, health and healing in Sumerian, Elamite, Akkadian, Assyrian, Kassites and even Achaemenid beliefs. Enki or Ea, who had a close relationship with water and the sea, has influenced on humans with water and the sea creatures. Understanding the relationship between the mythical cultures of the Mesopotamia region and medicine, which is also influenced by some of the southwestern and southern provinces of Iran, will lead to a better understanding of the remaining beliefs in the attitude of native residents of these regions to health.

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34 Enki or Ea: The god of medicine in ...

Authors' contributions

AT and MZ conceived and designed the format of the manuscript. MZ, THB, HB, and AT drafted and edited the manuscript. THB, and AT reviewed the manuscript. All authors contributed to the critical reading and discussion of the manuscript. All authors have read and agreed to the published version of the manuscript.

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36 Enki or Ea: The god of medicine in ...

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