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GANJA
MEDICAL SCHOOL
(11th c. AD)

GABALA
PHARMACY FACTORY
(8th c. AD)

BAKU
* SHAMAKHI
MALHAM MEDICAL SCHOOL
(12th c. AD)

NAKHICHEVAN
MEDICAL SCHOOL
(12th c. AD)

TABRIZ
DAR AL-SHIFA MEDICAL ACADEMY (1300-1301 AD)

BAGHDAD
DAR AL-SHIFA MEDICAL CENTER (8th AD)

ADUDI HOSPITAL

ISFAHAN
MEDICAL SCHOOL & HOSPITAL (17th AD)

THE AZERBAIJAN ASSOCIATION OF MEDICAL HISTORIANS (AAMH)

AZERBAIJAN

MEDIEVAL MANUSCRIPTS
HISTORY OF MEDICINE
MEDICINAL PLANTS

by FARID ALAKBARLI

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INTRODUCTION

In 2005, several unique medieval medical manuscripts from Azerbaijan have been included in the "Memory of the World Register" of UNESCO. Despite this achievement, there is a huge deficiency of information concerning the history of medicine in our country. Until now, there has not been any book issued in English which is devoted to the medieval medical manuscripts of Azerbaijan. The present edition is the first attempt to create a general work about this topic.

The Institute of Manuscripts of the Azerbaijan National Academy of Sciences has a collection of 390 early medical documents, which include 363 manuscripts dating from the 9th century. Most are written in Arabic - the literary script of the day. Of these, 70 are in the Arabic language, 71 in Turkic languages (Azeri, Ottoman Turkish, Tatar, Komyk, Uzbek), and the remainder in Persian.

UNESCO certificate documenting the acceptance of medieval manuscripts of Azerbaijan into the Memory of the World Register. (July 29, 2005).
The Manuscript Institute is fortunate to have some unique treasures in their collection. For example, we have one of the oldest copies of "Canon of Medicine" (1030) by Ibn Sina, who was known in the West as Avicenna (980-1037). The manuscript was copied in 1143 about a hundred years after the physician's death. Avicenna, born in Bukhara (Uzbekistan), went on to do much of his medical observation in Azerbaijan and Iran. "Canon", an encyclopedic work in Arabic, is considered to be the single, most famous book in medical history - both in the East and in the West.

Each manuscript is unique. Usually, palace rulers commissioned such manuscripts, and a few copies were issued by hand. Therefore, manuscripts of many medieval works are very rare now. Those in the Azeri Turkic language tend to be encyclopedic, but at the same time, concrete and brief. They also tend to be more practical than theoretical and are drawn from a variety of sources including Indian, Chinese, Arabic and Greek schools of medicine.

Certainly one separate book is not capable of capturing the entire range of questions related to the theory and practice of medicine in ancient and medieval Azerbaijan. The goal of this work is different. I have tried to provide readers with basic and general information about the history of healing practices in Azerbaijan. This book is written in popular style and intended not only for experts in the field of history of medicine, but for a wide range of readers.

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CHAPTER 1
HISTORY OF MEDICINE IN AZERBAIJAN

§1. HISTORICAL SURVEY

Azerbaijan is a country at the crossroads of numerous cultures, religions and civilizations. Therefore, ancient Azerbaijani medicine was influenced by various healing systems, such as Turkic, Iranian, Semitic and Greek medicine.

Ancient inhabitants of Azerbaijan had certain knowledge in the field of medicine. Archeological excavations at the Chalagan-Tepe site in Azerbaijan have revealed a human skull with traces of trepanning, which dates back to the 4th millennium BC. Similar skulls were found also in Ukraine and some other countries. The surgical operation was performed with a stone knife. This fact proves that early doctors from Azerbaijan attempted difficult surgical operations.

The Guti King from Azerbaijan (3rd millennium BC) Sumerian work (left). Saffron, a favorite medicinal plant of the Sumerians, is used in the traditional medicine of Azerbaijan (center). This Sumerian tablet from the Guti Era (more than 4000 years old) contains the world's oldest-known medical handbook (right).

During the 4th-1st millennia BC, healing practices in ancient Azerbaijani tribes of Guti, Lullu (Lullubi) and Mannai were influenced by Sumerian, Akadian, Babylonian and Assyrian medicine. This process became even more intensive in 2200 BC, when the warlike Guti tribe from Western Azerbaijan, conquered Mesopotamia and ruled it during a century. [39]. As a result, Gutiis became familiar with Acadian and Sumerian medicine.

Thousands of cuneiform medical texts were collected in temples and palaces in ancient Mesopotamia. [28] Who were ancient Mesopotamians? Sumerians spoke a specific language, which slightly resembles the Caucasian and Ural-Altaic languages, including modern Azeri. [19] It is an agglutinative language; in other words, morphemes (word-units) are added (usually as suffixes) to modify the meaning of words. The Guti-Lullubi languages were very specific (non-Iranian and non-Semitic), too. [24]
The Guti tribes from Azerbaijan widely used such medical and aromatic herbs which the Sumerians and Acadians had used such as lavender, laden, myrrh, sesame, dates, saffron, onion, garlic. Some massage and medical oils were imported by the Guti from ancient Egypt, Syria and Palestine.

Later, Guts and Lullubis created a number of little kingdoms in Eastern and Western Azerbaijan including Mannai, Andia, Uishdish, Gilzan, Allabria. [9, 22] Medicine in Mannai (9th-6th centuries BC) had common features with Assyrian medicine. According to Assyrian sources, fruits, cereals and medicinal herbs were sent to Nineveh from the mountains of Azerbaijan. Therefore, some Assyrian medicines were created on the basis of herbs, wine and oils, which were imported from Mannai and other small states of present-day Eastern Azerbaijan (Iran).

Mannai Silver Beaker (center) for taking drinks and medicines. An eagle’s head (left) and bracelet made of gold were used in magic and magical therapy (7th century BC). Found in Hasanlu and Ziviyeh, Eastern Azerbaijan (Iran).


3. 4. It was believed that pictures of ram horn on vessels protect people from diseases (4th c. BC). Found in Mingachevir, Azerbaijan Republic.

Assyrian medicine had a great impact on the healing practices in this region. However, in the mountainous areas, Guts and Lullubey used their own folk treatment methods applying herbs, milk products and spices soaked in wine. Herbal wines were used against indigestion, diarrhea, weakness and other diseases.

During the 1st millennium BC, a number of Iranian tribes from Central Asia moved to Azerbaijan, settled here and gradually mixed with local population. [29] They introduced Arian traditions of healing. As a result, medicine in Azerbaijan was enriched by new elements. Now, it was based not only on the Lullubi-Guti and Mesopotamian medical traditions, but also on Iranian healing practices. This syncretism in medicine dominated in the Median (Mede, Mada, Madai) state, which existed in Eastern Azerbaijan and Central Iran in the 7th-6th century BC.

During rule of the king Kikasar, Medes created the Median Empire which included the entire Iran and Babylonia and bordered with Asia Minor in the West and Afghanistan in the East. It was the greatest state of that time. [20]
Therefore, Media and Medes are mentioned in the Bible. In this period, medical theory was based on the Zoroastrian conception of four holy elements (fire, water, earth and air).

Thus, the teaching about the four Holy elements originated by the Zoroastrians deeply influenced the Greek philosophy. [25, 41]

In the period of 6th-5th centuries BC, these scholarly doctrines were adopted and developed by such great Greek scholars as Empedocles, Heracles and Hippocrates. [16, 17, 18]

According to Mary Boyce: "Zoroastrianism is the oldest of the revealed world-religions, and it has probably had more influence on mankind, directly and indirectly, than any other single faith." [13]

Zoroastrianism was so influential in Azerbaijan that almost all medieval Arabian and Persian historians including Yakut al-Hamavi (1179-1229) and others considered Azerbaijan as the native land of Zoroaster. [42]

These statues of Goddesses of Fertility (1st c. BC - 2nd c. AD) were found in Khinisli and Garibli archeological sites (Azerbaijan Republic). It was believed that they are able to heal infertility and reproductive disorders.

Median priests recommended cleanliness and ritual hygiene which played a great role in the prevention of diseases.

In the 6th century, Media was conquered by Persian Achaemenids but remained an important center of religion, science and medicine of the Achaemenid Empire. During this period, there were professional doctors in Azerbaijan. According to legends the first physician in the world was named Tritha. The main treatment methods included surgery, medicinal herbs and magic ("word, herbs and knife" in Avesta). Payment often was made by natural products, not by money. Wealthy patients were obliged to pay more than poor people.

Greek medicine became famous during the Age of Hellenism. After the collapse of the Achaemenid Empire in 4th century BC, the territory of the present-day Azerbaijan gained its sovereignty under the
name Adarbadegan or Adurbadegan (early version of the name "Azerbaijan"). The Greek name was Atropatena. [34] It was a Hellenistic state ruled by the local Zoroastrian dynasty of Atropatids. During this period, development of medicine in Azerbaijan was characterized by two trends. On the one hand, Greek physicians like Erasistrates repeatedly visited Media to collect medical information, and books by Hippocrates and Galen were widespread in this region. On the other hand, Atropatids and local Zoroastrian priests tried to limit dissemination of Greek medicine and culture in Azerbaijan.

During the rule of Persian Sasanids (2nd-6th centuries AD), the King's Temple of Zoroastrians (Azerbaijani Nilooz Temple) was established in Shiz (Gazaka, Ganjak) city in present-day Azerbaijan. Zoroastrians believed that physical health was related to spiritual and religious purity. "Good thought, good word and good deed!" is an expression from the Avesta, the ancient religious book of Zoroastrians [8].

Ancient Azerbaijanis were concerned not only with the health of human beings, but also with the "health" of Nature (air, water, soil, fire). Pollution of the environment was strongly prohibited.

Glass bottles for medicines (1st century AD) found in Mingachevir (left) and Khinissi (right) archeological sites, Azerbaijan Republic.

In the north of Azerbaijan (Caucasian Albania or Arran) the ancient pagan cults and Zoroastrianism were replaced with Christianity in the 4th century AD, when teaching of Jesus Christ was declared the state religion of the Caucasian Albania kingdom. As a result, the Byzantine medicine became known here. A famous historian of the Caucasian Albania, Moses of Kalankatuy wrote in his

Ruins of the fortress gates of Gabala, the first capital of Caucasian Albania (1st century BC to 4th century AD), where a large pharmaceutical factory was situated.

A bronze incense burner for burning aromatic and medicinal herbs (7th century AD) discovered in Nakhchivan (Azerbaijan Republic). The image is of Javanshir (638-670 AD), king of Caucasian Albania.

Albanian jar graves (1st millennium BC) discovered in Mingachevir (northern part of Azerbaijan Republic). In some jars were found remains and seeds of medicinal herbs.
Azerbaijan. Healers were named "Gam" (shamans) or "Otachi" (herbalists), while medicines were called "Ota" (from "ot" - herb). Later, the Turkic impact on Azerbaijani traditional medicine became even stronger. That is why folk medicine in medieval Azerbaijan is often called "Turkachara" (Türkaçara - turkic healing).

During the 3rd-6th centuries, medical treatment related with Turkic shamanism was widespread among nomadic and semi-nomadic tribes of Azerbaijan such as Bulgar and Khazar. This was a healing method related to ritual dances and songs ("qam oyumu" in Azeri Turkic). Shamans (qami) used special ecstatic performances to expel malicious spirits from the diseased person's body. Such procedures could render a psychological or hypnotic effect and often really relaxed the patient, removed psychological tension and treated some nervous diseases. Musical accompaniment on tambourine and gopuz (a stringed instrument), and, sometimes, narcotic plants like henbane and fly agaric were applied to enhance the psychological effect.

Turkic phyotherapy also was popular in Azerbaijan. According to ancient Turkic beliefs, all medicinal herbs were created by Tangry (Tengri, Tann) who was the Supreme God of the Blue Sky. The Goddess of Grasses and Trees, Olen (Olen), was his wife. She was also considered to be the patron of life, trees, herbs, physicians, children and pregnant women. [31]
After the 7th century, the cult of Olgeng in Azerbaijan was replaced with the belief in Khidir Ilyas (Xidir Ilyas - Green Elias) - the patron saint of life, water, health and healing. A quotation from epic Dada Gorgud (Dede Qorqud - Grandfather Gorgud) [23] says:

Boz atlı Xidr mane geldi, üç kere yarami şiddet. 
Bu yaradan sene ölmum yoxdur - dedi.

Khidir has approached me on a grey horse. He has stroked my wound three times. "You will not die of this wound" he said.

Mother's milk was considered the best remedy. One scene describing how medicinal herbs with mother's milk were used to heal a lad who had been wounded comes from the ancient Azerbaijani epic Dada Gorgud, a compilation of legends that were set down in writing during the 11th century but contain stories that can be traced back to the 6th and 7th centuries:

Qırx inca qız yazıdı, 
daq çiçəyi dəşərdüler... 
daq çiçəyi ilə südü ənəndən 
oğlanın yarasına urdlar. 
Oğlanı hakimləre ismarlayıb...

Forty shapely girls ran, gathered flowers from the mountains, mixed them with mother's milk, rubbed this mixture on the wounds of the youth and left him with the healers.

Some other pieces of ancient Azeri folklore were devoted to medicinal plants. For example, short folk verses named "bayati" contain information about healing properties of yarpiz (yarpiz - water mint), uzerlik (üzərlək - harem), zoğal (zoğal - cornel), yemihan (yemişan - hawthorn), etc.

Özizinam yemişan, 
Yemişin, yemişin, 
Sağalmasın, durnuşmasın, 
Yaşa seni yemişin.

I am your friend, Hawthorn, 
Sweet food, honorable food, 
I have recovered, I have risen, 
Live long Hawthorn.

***

Üzərləksan, havasan, 
Min bir derde davasan, 
Balama göz dayoynin, 
Gözərləni ovasan.

You are [necessary like] air, Harem, 
You cure 1001 diseases, 
Prick out the eyes of the person, 
Whose evil eye bewitched my child

Usually, wounds were treated by such herbs as spearmint (nana), water mint (yarpiz), chamomile (go-banyastığı), which are known to have antiseptic and healing properties. Bitter wormwood (aciyovşan) is a popular herb against indigestion, lack of appetite and worms. Turks in ancient Azerbaijan and Central Asia believed that the God of
the Black Road (Qara Yol Tərəqqısı) treated wounds and fractures. A quotation from the early medieval "Irık Bittik" (Book of Fortune-telling)[15]treatise says:

Qara yol tərəqqısı,
Sinigini birleşdiririm,
Əziləşlərinini cəlaşdıririm.

I am the God of Black Road,
I treat fractures and I put together
the thorn off parts [of body].

Medical cauterization was used to disinfect wounds and stop bleeding. Usually, this procedure was performed with a burning piece of cloth. Early medieval Dada Gorgud epic [23] informs how a wounded Azeri hero Garajiq Choban treats his wounds with cauterization:

Qaraçəq çoban...çaxmaq çaxib
od xaydı, kepeneyindən
gurumsu edib yarasına basdı.

Qaraçəq Choban... it a fire with flint,
made a compress from his shirt
and pressed upon his wound.

In ancient Azerbaijan, surgical disorders were cured by physicians named Sinigchi (siniqși - fracture healers). Healing ointments from animal fat, including the fat of wolf, fox, cow, sheep’s tail (quruyq yağı) were used as compresses to heal bruises and dislocations. Fresh dough was applied on bruised places to remove tumors, pain and inflammation.

Compresses made of cow or horse manure were used against rheumatic pains, while urine was considered one of the best antiseptic remedies for infectious diseases of the skin.

Fractures were treated with a special diet, too. Very rich, thick and sticky soup from legs and heads of sheep or cow was named "bashayag" (başayaq - "heads-and-legs"), khash (xəş) or kallapaça (kella-paça). Sinigchi in Azerbaijan prescribed eating bashayaq regularly for fractures of bones. Usually, bashayaq was eaten with garlic, vinegar and yogurt.

Turkic tribes in Azerbaijan widely used various dairy products such as kumis (qımız - light alcoholic drink from sour milk), yogurt, ayran (yogurt mixed with water and salt) to treat various diseases. Kumis was recommended in treatment of tuberculosis, bronchitis and asthma. Yogurt was known as an excellent remedy against indigestion and diarrhea. Hot horse milk was used to treat cough and fever. Ayran was famous as the best remedy against diarrhea and thirst.

Gurud (qurud - dry salted quark) was used to promote digestion, while suzma (süzma - squeezed yogurt) was used to treat persons suffering from diseases of liver.

Early laryngologists in Azerbaijan were named Chopchu (çöpçü) This word derives from the Azeri Turkic "chop" (çöp) - a mote. These healers were specialized in clearing the throat from remains of food and little bones. It was believed that little pieces of food which stuck in the throat could cause serious diseases in all parts of the body: heart, stomach, head, teeth, kidney, liver.

Turks attached great importance to a healthy lifestyle and to physical training. They spent their life on horseback and constantly participated in horse racing (cidir), fencing (qılınç oy-natmaq), wrestling (gülüş) and bow shooting (ox atmaq) competitions.
New era in medicine began after the invasion of Arabs and the spread of Islam in Azerbaijan. The development of various sciences, including medicine in Azerbaijan, occurred when Islam was introduced (7th century AD).

The great empire created by Arabs and named Khalifat rapidly merged various cultures of the Islamic domain. Since then, the Azeri, Turkish, Persian, Indian, Greek, Arabic, Turkish schools of medicine deeply influenced each other. Various scientific traditions located within the boundaries of this common empire led to an unprecedented era of mixing infusion in all branches of science. [40] Arabic, the language in which the Holy Koran had been written, gradually became the official language of culture and science, including medicine. This facilitated understanding between Azerbaijani physicians and those from various eastern countries. By the 10th century, a single language linked peoples from Spain to India. Since then, the Arabic language became for Azerbaijan what Latin and Greek had been to the West - the language of literature, the arts and sciences, and the common tongue of the educated.

An image of a medical sieve from the pharmacological manuscript "Ilkniyaratli-Badil" (Baku's Institute of Manuscripts, cop. 17th century AD)

The blossoming of original thought in Azerbaijan science began as the tenth century drew towards an end. Many interesting scientific concepts concerning medicine we can find in "al-Tahsil" by the great Azerbaijani philosopher Bahmanyar al-Azerbaijani (died. 1065/6 AD). Medieval biographer Ali bin Zeyd al-Beyhaki wrote about him: "Philosopher Bahmanyar, a sage and student of Abu Ali (Avicenna), Zoroastrian, and native of Azerbaijan. He investigated the most involved questions of philosophy..." [7]

In his philosophic works, Bahmanyar touched upon some questions of biology and medicine. Like Ibn Sina, he was a follower of Aristotle in science.

The well-known pharmacist Abu Abdullah Muhammad bin Namvar Tabrizi (1194-1245 AD) was born in Azerbaijan in the city of Tabriz. He is the author of the famous book entitled "Adwar al-Hammiyat" (The Principal Medicines). The book by Abu Abdullah contains descriptions of more than 500 medicines arranged in alphabetical order. He widely used books by Abu bakir Razi, Ibn Sina and other great physicians and scholars.

The books by Abu bakir Razi, including "Al-Havi fit-Tibb" (Comprehensive Book on Medi- cine) and "Mansuri fi al-Tibb" (Winner in Medicine) were especially popular in medieval Azerbaijan.
Shamsaddin Eldaniz (1136-1174)  
Jahan Pahlavan (1174-1186)  
Kizil Arslan (1186-1191)  
Abubakir (1191-1210)

Atabeyes (Turkic kings) of Azerbaijan from Eldaniz (Ilindenizid) Dynasty who substantially contributed to development of medicine by opening new apothecaries and hospitals in their capitals - Tabriz, Ganja and Nakhchivan - and in many other cities of Azerbaijan, Iran and Iraq, which were under the Eldaniz rule during 1136-1225 AD.

During the 8th-14th c. AD, a number of clinics were established in three large historical areas of Azerbaijan:

- Major Dar al-Shifa medical center (13th-14th centuries) in Tabriz and about 67 large hospitals in various cities of Western Azerbaijan, Eastern Azerbaijan, Ardabil and Zanjan provinces of the present-day Iran.
- Pharmacy factory in Gabala (8th c. AD) and numerous public hospitals and pharmacies in the cities of Ganja, Barda, Beylagan and other settlements of ARRAN (western part of the present-day Azerbaijan Republic)
- Malham Medical Academy (12th century) in the city of Shamakhi and a number of clinics in Darband, Shabran, Baku and other cities of SHIRVAN (Eastern part of the present-day Azerbaijan Republic).

Southern Azerbaijan and Arran were ruled by the Turkic atabeyes (kings) of the Eldaniz (Ilindenizid, Eldiguzid) dynasty, while Shirvan was ruled by Shirvanshahs of the local Kersani dynasty from the 6th century.

Tabriz, the capital of atabeyes was one of the largest cities in the Muslim world. Thus, in those times, the population of Tabriz was about 200,000. It must be noted that during this period, the population of the largest European towns such as Paris, London and Florence did not exceed 20,000 to 30,000 people.

Eldanizids were a Seljuk dynasty, which represented the Oghuz branch of Turkic family. Such Eldanizid rulers as Shams ad-Din Eldaniz (1136-1174 AD), Abu Jafar Muhammad Jahan Pahlavan (1174-1186 AD), Kizil Arslan (1186-1191 AD), Atabey Abubakir (1191-1210 AD) and Atabey Ozbek (1210-1225 AD) promoted the development of medicine in Azerbaijan.

During the rule of Eldanizids, numerous hospitals and pharmacies appeared in Tabriz. These hospitals, or Dar al-Shifa (House of Healing), bore little resemblance to European clinics of those times. Thus, the Christian church in the Medieval Europe taught that soul is more important than body and, therefore, medical treatment was not valued much. On the contrary, medieval hospitals in Azerbaijan were places where the sick could be treated and cured by physicians.
Physicians who worked in various Dar al-Shifa tried to heal their patients by means of natural medicines and their mixtures. In addition, a number of medical schools and libraries were attached to the largest hospitals. [12, 38]

Azerbaijani scholars used to write medical books in Azeri Turkic, Arabic and Persian. Manuscripts were copied by calligraphers, bound with leather and decorated with colored drawings of medicinal herbs, animals and minerals.

Among the scientists and physicians who lived and worked in Southern Azerbaijan during 11th-12th centuries we should emphasize the names of Abu Said Tabrizi, Abdulla al-Urmavi and Safiaddin al-Urmavi. [37]

Medicine developed also in Shirvan (Northern Azerbaijan). One of the large hospitals was situated in the district of Malham nearby Shamakhi, the capital of Shirvan. The founder and chief of hospital, Kafiyaddin Omar was the uncle of the great Azerbaijani poet Khagani Shirvani (1120-1199 AD). Kafiyaddin also founded a special medical school where he taught students to treat various ailments with natural remedies [32].

In this school, students learned Arabic, Persian, Greek and other foreign languages. Such hospitals were founded not only in Azerbaijan, but also in different countries of the Muslim East. The Ibn Tulun Hospital and Mansuri Hospital of Egypt, the Adudi Hospital of Baghdad, and the Nuri Hospital of Morocco were very famous. The shahs, khilifs and rulers paid special attention to their organization, regularly visited them, and personally inspected the state of affairs in them as well as inquired about the condition of patients.

A medieval pharmaceutical factory with numerous technical appliances for producing medicines was found during archaeological excavations in the Kabala Fortress, the former capital of the Caucasian Albania (southern-western part of the present day Azerbaijan Republic). This factory dated back to the 8th-9th century AD. Numerous jars and bottles for medicines and a special appliance for distillation of essential oils from medicinal plants were discovered.