






Naira Hambardzumyan (Yerevan)

 <https://orcid.org/0000-0002-2792-8891>
e-mail: nairahambardzumyan@yahoo.com

Vardanush Postajyan (Yerevan)

 <https://orcid.org/0009-0005-0582-5030>
e-mail: keshishian.varty@gmail.com

Barbara Zipser (London)

 <https://orcid.org/0000-0002-1600-1257>
e-mail: barbara.zipser@rhul.ac.uk

PREMODERN ARMENIAN MEDICINE, TSAGHIK AND POTENTIAL NEW EVIDENCE FOR THE EARLY HISTORY OF SMALLPOX*

Abstract. The paper presents new ethnomedical and philological evidence for a disease that is commonly identified as smallpox, predating the earliest known and convincing descriptions of the 10th century AD physician Rhazes. Our earliest source dates to the 7th century AD in Armenia. It refers to a disease called *Tsaghik*, which translates to flower, a name that is today in modern Armenian used to describe smallpox. We established a number of plant derived treatments for this disease. Moreover, we present preventative measures from Armenian folklore, some of which were still in use a few decades ago.

Keywords: smallpox, Anania Shirakatsi, Grigor Magistros Pahlavuni, Hamaspyur

1. Introduction

Premodern Armenian medicine presents a missing piece in the puzzle of our understanding of European and Asian medicine. This gap largely stems from two factors: firstly, Armenian studies are a very small field in academia, which

* The work was supported by the Science Committee of RA, within the framework of Research project No 23PTS-6B005. The share of the author in the preparation of the work is: N.H.: conceptualization and design of the study, writing, data curation, funding acquisition, and critical review of the manuscript. V.P.: data curation, writing, and reviewing of the manuscript. B.Z.: design of the study, data curation, critical review of the manuscript. All authors read and approved the final manuscript.



has sadly also been in decline in recent decades. This means that fewer people are working in the field, and even fewer still are or have been working on pre-modern Armenian medicine. Second, the largest Armenian manuscript collection in existence, which is located at the Mesrop Mashtots Research Institute of Ancient Manuscripts, commonly known as the Yerevan Matenadaran, was long only partially accessible due to political circumstances.

This rendered research on this important topic even more difficult, and only very few publications exist. Interdisciplinary and international research was largely impossible. Presently, we have a unique opportunity to decipher these works, conducting systematic review and meta-analysis. The Yerevan Matenadaran, which also houses worldwide the strongest expertise on this topic, is now open to the West and Armenian researchers are openly looking for opportunities. This also provides an excellent chance to draw parallels between Armenian and other sources.

The topic of the present paper are early mentions of a disease that is commonly believed to be smallpox. As it is always the case, one has to be very careful with retrospective diagnosis. Yet, our evidence suggests that there was a certain continuity of such a disease existing in Armenia over the centuries.

But from the textual descriptions, we are not in a position to tell what disease precisely it may have been, whether it was indeed just one disease rather than an umbrella term for two or more diseases that share a common feature but may have had from a modern perspective an entirely different aetiology, or whether what we call smallpox today may have even been amongst these. Strictly speaking, smallpox is from a modern perspective an umbrella term in itself as it could refer to *Variola minor* or *major*. To add even more complexity, we do not have full and reliable data on the development of *Variola minor* or *major* over time.

To avoid confusion in the following, we are going to refer to the disease mentioned in Armenian manuscripts as *Tsaghik*, which is a transliteration of the Armenian term. We are going to use the term *Variola*¹ to describe smallpox as defined in a modern biomedical context.

In the following, we shall present new evidence on early mentions of the term *Tsaghik* in Classical Armenian (CA) sources. While we are not in a position to tell whether or not *Tsaghik* may have always or ever been *Variola*, or indeed a potential precursor of *Variola*, our analysis will yield intriguing new philological, ethnomedical and historical data.

¹ We use the term *Variola* to describe the disease that is in modern biomedical terms called smallpox, as we can in the vast majority of cases only detect the pathogen from human remains for the time period under consideration. We usually only know that a person died from or with an infection of this virus and lack any information on the symptoms of this diseases. This is in particular the case when it comes to extinct clades of the pathogen.

2. The history of *Variola*

While it is not within the scope of this paper to work on *Variola* from a biomedical perspective, we would like to present a brief background against which our textual evidence on *Tsaghik* should be seen. *Variola* has been behind devastating epidemics that claimed millions of lives in the past several centuries. Recent genetic studies² found strong evidence of an ancestor of *Variola* in human remains dating to about the 7th to 10th centuries AD, both Northern Europe. Whether this previously unknown and now-extinct *Variola* ancestor caused smallpox is unknown. A number of samples from broadly the geographic area of Armenia tested negative. However, this could have been caused by multiple circumstantial factors and does not mean the ancestor of *Variola* was not present in Armenia historically³.

3. The history of *Tsaghik*

3.1. Ancient and medieval sources and legends

Tsaghik, the CA word for flower, has been a widespread disease in Armenia in past centuries. The origins of this disease are deeply intertwined with Armenian mythology and religious worship, and as a result, beliefs and traditions associated with the disease *Tsaghik* have developed over the centuries, some of which were still in use decades ago. One such belief concerns the Wednesday preceding the feast of Ascension, which is celebrated in Spring, 40 days after Easter. Women usually fasted on this Wednesday so their children would not be infected with *Tsaghik*⁴. But this ceremony has much older roots, going back to the pagan period, where it related to ancient gods as well as the awakening of nature and rebirth.

During the Christian festival, young women and girls sang songs in praise of the *Tsakhkamer*, in this instance a cross-shaped wreath woven with flowers, and twirled it among the pilgrims, who sprinkled water on it. This ceremony known as flower praise was a way of honoring the flowers and plants, because they also had medicinal value and were the necessary components of the ancient Armenian pharmacy. In the end, the *Tsakhkamer* was donated to the church. This set of rituals included several pagan and folk customs, which highlighted the worship of the flower, which eventually turned into a belief that the *Tsakhkamer* could neutralize *Tsaghik*.

² See also J.H. BONCZAROWSKA, J. SUSAT, B. MÜHLEMANN *et al.*, *Pathogen Genomics Study of an Early Medieval Community in Germany Reveals Extensive Co-infections*, *GBio* 23, 250, 2022, which attests finding ancestors of *Variola* in South West German cemeteries dating to the fifth to eighth century AD.

³ B. MÜHLEMANN *et al.*, *Diverse Variola Virus (Smallpox) Strains Were Widespread in Northern Europe in the Viking Age*, *Scie* 369, eaaw8977, 2020.

⁴ See: E. LALAYAN, *Non-Obligatory Fasting and Holidays*, *EthJ* 10, 1903, p. 225.

Studies have linked the *Tsakhkamer*, (a term that could also refer to a girl leading the procession and carrying a wreath woven with flowers)⁵, with virgin Varvara⁶, the patron saint of *Tsaghik*⁷. The Armenian legend has it that Varvara was a pious girl who was persecuted by her idolatrous father for converting to Christianity and hence sought refuge in a cave shrine at the foothills of Mount Ara, where she cured children with child-*Tsaghik* (Arm: տղայոց ծաղիկ [tghayoths tsaghik])⁸. She was eventually discovered with the help of the local shepherds and killed by her father. Before being martyred, Varvara prayed to God for those afflicted with *Tsaghik* and measles⁹ to be healed in her name. The cave shrine at the foothills Mount Ara where Varvara was martyred later became a place of pilgrimage for Armenians. The site is believed to possess powerful healing properties that are directly associated with the appeal to protect and preserve children from *Tsaghik*.



Fig. 1. The Cave of the Virgin Varvara at the foot of Mountain Ara in Armenia.

⁵ See: S. MKRTCHYAN, *Armenian Festival and Ritual Culture*, Yerevan 2016, p. 105.

⁶ V. BDOYAN, *The Agricultural Culture in Armenia*, Yerevan 1972, p. 455–456.

⁷ Virgin St. Varvara (Barbara) was martyred during the reign of King Maximianus, in the town of Heliopolis, in Phoenicia, in about 305 AD. In the West, she is associated with explosives, mining, and artillery. In the Western church, her feast is celebrated on the 4th of December and it is at least in Germany and Poland customary to cut a small branch from a cherry tree on this day that would then flower on the 24th of December, Christmas Eve.

⁸ *Ibidem*.

⁹ A.B. ALEKSANYAN, *General and Special Epidemiology*, Yerevan 1960, p. 736.

The water that flows from the upper layers of the cave shrine is known as “holy virgin’s tears”. It is believed to possess healing properties and cure high temperature, fever, rheumatic disorders, various skin diseases, as well as vision-related issues. The locals refer to it as “holy water”. Notably, it contains a substantial amount of zinc, which helps to treat various infectious diseases. Studies showed that zinc is important for the immune system¹⁰.

Numerous authors in Armenian medieval medical literature also provide testimonies on a disease that is explicitly or implicitly described as *Tsaghik*. Many of the Armenian manuscripts scribes often depict the spread of the “untimely deadly diseases”¹¹ like *Tsaghik* (Arm: ծաղկախոս [tsaghkakht]) and natural *Tsaghik* (Arm: բնական ծաղիկ [bnakan tsaghik]) and the great epidemic of “plague” (which claimed thousands lives, leaving “the entire country and every man” in mourning¹²) with horror. A number of medieval Armenian historians, including physicians, referring to *Tsaghik* in their works, not only outlined the symptoms of this disease in detail but also proposed certain methods for its prevention, control, and treatment¹³.

While examining the history of Armenian social and medical works dating back to the 5th century, we observed that the Armenian Church and the state attempted an active involvement in tackling the spread of infectious diseases prevalent in ancient times. This included a compassionate and philanthropic approach

¹⁰ M. MAYWALD, L. RINK, *Zinc in Human Health and Infectious Diseases*, Bio 12.12, 2022.

¹¹ Even though not all the knowledge on the ancient period has been preserved, and neither the known nor unknown diseases have their clear names, by combining the discourse in the old Armenian manuscripts and especially the identical manifestations of some terms, it can be concluded that frequently encountered “untimely death” (Arm: մահտարածամ [mahtarazham]), “unexpected death” (Arm: եղև մահտարածամ [egev mahtarazham]), “early death” (Arm: ի տարածամ մահուան [i tarazham mahuane]), “human disease” (Arm: մարդաճարակ [mardacharak]), “deadly disease” (Arm: մահաճարակ [mahacharak]) and other expressions are distinct terms and are used during great epidemics, especially severe outbreaks of *Tsaghik* and Plague.

¹² Let’s take one of many examples: the Gospel memorial book written in 1623 in the rural town of Khizan, also known as Hizan in the western part of historical Armenia, the province of the same name in the province of Bitlis, in the territory of present-day Turkey. The scribe imitating the manuscript, priest Hovhannes gives notable details about a severe epidemic that broke out not only in the territory of Armenia but also in the surrounding countries and cities, as a result of which the number of deaths reached 100 per day in each city, 2 or 3 dead people from each house were buried at the same time. *And so, this year the severe epidemic, which occurred in Egypt and Constantinople 2 years ago, came to Aleppo, Urha, Amid, Baghesh, and Van, and among us, in Khizan and nearby provinces. The epidemic became so severe that 100 people died a day in every city, 2–3 from many families were taken to the grave at once, and a (church) ceremony was performed for 10 dead people. In the evening, the injured person (the one afflicted with the disease) did not come out into the light (did not live till morning), and the priests did not go home from the cemeteries until evening, and they did not have time to give communion to the sick.* See: V. HAKOBYAN, A. HOVHANNISYAN, *The Memorial Books of Armenian Manuscripts of the 17th Century, (1621–1640)*, part B, Yerevan 1978, p. 115.

¹³ See K. KOSTANIANTS, *Grigor Magistros’s Letters*, Aleksandrapol 1910, p. 352.

towards the most vulnerable members of society, in particular those infected and in need of care. Moreover, the care included not just isolating patients, but also creating suitable treatment and care interventions, many of which are documented in the Armenian written sources dating back to the 5th century, including in writings of Pavstos Buzand¹⁴ and Movses Khorenatsi¹⁵. These 5th-century authors evidenced that hospitals for lepers¹⁶ and the diseased were founded all around Armenia¹⁷.

The Armenian Catholicos Nerses the Great¹⁸ acted as the initiator and driving force of these important interventions in medicine. Here is one of the decisions of the Ashtishat church assembly¹⁹ convened by him in 365 AD: *To prevent the*

¹⁴ Pavstos Buzand is one of the prominent figures of Armenian historiography of the 5th century. His *History* covers about half a century, from the reign of the Armenian king Khosrov Kotak (Khosrov III the Small, 330–338 AD) to the division of Armenia between Sasanian Persia and Byzantium in 387. This was a tough period in the history of Armenia, full of heavy and sharp political struggle and rich in dramatic events. The nickname Buzand has mainly been interpreted to mean a “Byzantine or a person educated in Byzantium”. According to Stepan Malkhasyants, the word Buzand consists of the Indo-European roots *bu* and *zand* and means “interpreter of historical events”. See: S. MALKHASYANTS, *History of Armenians (Pavstos Buzand)*, Tbilisi 1941 (June 7); P. BUZAND, *History of Armenians*, trans. S. MALKHASYANTS, Yerevan 1968.

¹⁵ Movses Khorenatsi (410–490 AD) was an intellectual and political figure of the Golden Age, historian, translator, teacher, hermit. Movses Khorenatsi’s parchment manuscripts journal “History of Armenia” is a trustworthy verified document of national self-recognition for generations of all eras. Movses Khorenatsi was honored with the names of *Father of Armenian History* (Arm: պատմահայր, patmahayr), *Father of Poets* (Arm: քերթողահայր, kertoghahayr), *Movses the Great*, *Saint Movses Khorenatsi*. There is little biographical information about Khorenatsi, most of which was randomly reported by the author himself in his work *History of Armenia*. M. KHORENATSI, *History of Armenia*, introd. and trans. S. MALKHASYANTS, Yerevan 1997, p. 5–17 (428).

¹⁶ P. BUZAND, *History of...*

¹⁷ M. KHORENATSI, *History of...*, p. 428.

¹⁸ Nerses I the Great (≈335–373 AD) was the Catholicos of All Armenians in 353–373 AD, successor of Catholicos Paren I Ashtishatti. He is one of the celebrated saints of the Armenian Apostolic Holy Church. He was also called Nerses Parthev. He comes from the lineage of Grigor Lusavorich (the Illuminator), the grandson of Husik I Partev. During his childhood and youth, he lived, was educated and brought up in Caesarea. Then he returned to Armenia, where King Arshak II appointed him chamberlain of court. He married Sahandukht, daughter of Vardan, son of Armenian commander Artavazd Mamikonyan. In 351 AD, by the order of King Arshak II, Nerses Parthev led the Armenian delegation to Constantinople and participated in the settlement of the tense Armenian-Roman relations. See: G. HOVNANYAN, *Nerses the Great and his Influence on Armenia*, Vienna 1851. Nerses I the Great carried out great spiritual and educational activities and was considered the first great reformer of the Armenian Church. He started the work of spreading and strengthening Christianity in Armenia. He opened schools, orphanages, hospitals, alms houses, poorhouses, other care giving institutions, rebuilt a number of monasteries and churches. Nerses I the Great tried to increase the role of the church in the internal life of the country. M. YERETS, *History of Saint Nerses Partev, the Armenian Catholicos*, vol. VI, Venice 1853.

¹⁹ Ashtishat church assemblies were held in the 4th–5th centuries in 354, 356, 435 AD in Ashtishat township of Taron province of Greater Armenia, for the purpose of discussing religious and church

*spread of infectious diseases, establish “lepers” homes, hospitals for the sick, shelters for the disabled and the blind*²⁰.

Private hospitals have existed since at least late antiquity in Armenia. This is evidenced by the fact that in the 3rd century AD (c. 260 AD), the wife of the Armenian feudal prince Suren Salahuni²¹, Aghvita²², asked her husband to build a leprosarium using her own funds. She built this facility near the healing mineral springs called Arbenut²³. It is worth mentioning that the first leprosaria in Europe were opened about three hundred years after that²⁴. The earliest hospital in what could broadly be regarded as the Western world dates to around 350 AD²⁵.

We could therefore hypothesize that patients afflicted by *Tsaghik* were also placed in settings for “lepers”, hospitals, and shelters. Thus, Armenian historians provided notable information about ancient Armenian medical science and, especially, herbal medicine and pharmacology. Armenian historian Tovma Artsruni²⁶ (9th century AD) documented that as early as in the 1st century BC, wonderful gardens were established in Armenia on the initiative of King Artashes²⁷, where herbs were grown with great care: *Around the castle of Artamet, he planted various groves of colorful and fragrant flowers, which were not only pleasing to the eye and*

canonical issues. As evidenced by Pavstos Buzand, Ashtishat was the main place for church meetings in the 4th century. M. YERETS, *History of...*

²⁰ King Arshak II Arshakuni also participated in the Ashtishat Council. According to the decrees of the assembly, it was forbidden to engage in drunkenness and polygamy, and many pagan customs were forbidden, including indecent weeping over the dead. The assembly also adopts a rule that the dukes, the king, and the wealthy should be lenient and merciful towards their subjects, servants, and common people. ARTSRUNI TOVMA AND ANONYMOUS, *History of the Dynasty of Artsruni*, trans. V. VARDANYAN, Yerevan 1978, p. 75.

²¹ Suren Salahuni (around 260 AD) was an Armenian prince.

²² Princess Aghvita (260 AD) was Prince Suren Salahuni's wife.

²³ Arbenut is a territory in historical Armenia.

²⁴ See: Gh. ALISHAN, *Hayapatum. Historians and Histories of Armenia*, vol. II, Venice 1901, p. 85–87.

²⁵ For a chronology of hospitals in the West see P. HORDEN, *The Earliest Hospitals in Byzantium, Western Europe, and Islam*, JIH 35.3, 2005, p. 361–389.

²⁶ Tovma Artsruni is an Armenian historian of the 9th–10th centuries, who wrote the work *The History of the Artsruni Dynasty*. He presented the history of Armenia and Vaspurakan province through the lens of the history of the House of Artsruni. The work is a valuable source not only for the history of Armenia, but also for that of neighbouring countries. The author starts the narrative from ancient times, tracing it up to the end of the 9th century AD. After him, the work was continued by several anonymous authors, who extended the narrative to the 1370s. See: N. BYZANTINE, *Tovma Artsruni and Anonymous Artsruni Are Two Other Historians*, Baz 1905, p. 227–233, 264–271, 328–337, 398–407, 464–471. V.M. VARDANYAN, *About Several Place Names Mentioned in “History of the Dynasty of Artsruni”*, HPhJ 1, 1973, p. 111–122.

²⁷ Artashes II (about 60 BC – 20 BC), Armenian king from 30 Artashesian Wealth, the son of Artavazd II. After the capture of his father and brothers, Artashes signed a military alliance with the Parthian King Hrahat IV and retreated from occupied Armenia to Parthevstan (nowadays Iran) with the king's regiment. See *Armenian Soviet Encyclopedia*, vol. II, ed. V. HAMBARDZUMYAN, K. KHUDAVERDYAN, Yerevan 1974, p. 139–140.

*nostrils but also suitable for ingenious physicians to prepare medicines according to the art of Askghepias*²⁸. According to the Armenian renowned historian Movses Khorenatsi, the Armenian king Vagharshak²⁹ (2nd century BC) established flower gardens in the marshy areas of Tayk³⁰ and Kogh³¹.

And, as evidenced by chronicler Ghazar Parpetsi, a variety of medicinal plants growing wild were grown and bred in those gardens: *There, in the Ararat valley, there are many plant roots that crafty, skilled and knowledgeable doctors use to prepare fast-acting medicinal remedies, and drinks, with which they treat those suffering from illnesses for an extended period*³².

²⁸ Many Armenian mineral medicines had a great reputation: Armenian bole, Armenian stone, Armenian borax, as well as compounds of mercury, iron, zinc, and lead. Among them, Armenian bole (Bulus Armenus) deserves special attention, it contains Alumosilicates and Ferrum oxide, and it was used as an anti-inflammatory, anti-allergic, and anti-tumor drug, and it was also used in the case of bleeding and poisoning. It is a dark red or yellow bole that was used in the past as an anti-inflammatory, wound-drying, hemostatic, mucoactive and anti-venom agent. It was produced mainly in the area of the city of Ani that is why it is also referred to as Ani bole. A large amount was exported from Armenia to the countries of the West and especially of the East, and had a great reputation. In his *Canon* the Arab physician Ibn Sina speaks highly of Armenian or Ani bole in particular, noting: *Armenian or Ani bole has a surprising effect on wounds. It is particularly useful against pneumonia and plague. Many were saved during the great epidemic because they used to drink it with light wine*. See: S. VARDANYAN, *The History of Armenian Medicine. From Antiquity to the Present Day*, Yerevan 2000, p. 32. Razi also talks about the healing properties of Armenian bole in his book, writing at least four prescriptions in which Armenian bole constitutes an important ingredient. See: *A Treatise on the Small-Pox and Measles by Abū Becr Mohammed Ibn Zacariyá Ar-Rázi (Commonly called Rhazes)*, trans. from the original Arabic W.A. GREENHILL, London 1848, p. 54, <https://archive.org/details/39002086344042.med.yale.edu> [24 X 2024].

²⁹ Vagharshak I was an Armenian king (247–225 BC), the founder of the Arshakuni Dynasty in Armenia. Armenian historians consider Vagharshak to be the brother of Arshak the Great (248/247 BC – around 211 BC) or Mihrdat I the Great (171 BC – 198/137 BC) of the Parthian king Arshakuni brother. Having reigned in Armenia for 31 years with the help of the latter, Vagharshak I made Mtsbin its capital.

³⁰ Tayk is the 14th province of Greater Armenia. The name *Tayk* comes from ancient times and has an ethnic origin. Xenophon provided the earliest accounts of Tayk. Under the reign of Artashes I, Tayk became integrated into the Armenian kingdom of Greater Armenia. Remaining a part of Greater Armenia thereafter, Tayk endured until the era of Arab dominance. Throughout the IV to VIII centuries, Tayk was governed by the Mamikonians, during which it functioned as a distinct administrative and political entity, a feudal government. Tayk was administratively divided into 8 provinces: Kogh (center: Kriakunk), Berdats por (center: Banak), Partizats Bor (center: Partez), Tchakk (center: Ishkhank), Boghkha (center: Ughtik), Vokaghe (center: Tortum), Azordats por (center: Azord), Arsiats por (center: Arsis). T. HAKOBYAN, *Historical Geography of Armenia*, Yerevan 2007, p. 234–235.

³¹ Kogh was a province within the Tayk province of Greater Armenia. It was located in the mountain valley region of the estuary of the Kur River (Kriakunk). It bordered on Ardaha of Gugark in the North, Vanand of Ayrarat in the East, Berdats Por of Tayk in the South, and Tchakk provinces in the West. Presumably, it is identified with Kulkha mentioned in the Urartian inscriptions. The village of Kriakunk was located in Gavar. T. HAKOBYAN, *Historical...*, p. 234–235.

³² G. P ARPETSI, *History of Armenia. A Letter to Vahan Mamikonyan*, new Armenian trans. and notes B. ULUBABYAN, Yerevan 1982, p. 540.

We also find such references and episodes in the works of foreign authors and travellers. Thus, in his *Annals* the Roman historian Tacitus³³ mentioned how Armenian shepherds treated wounds with traditional medicines³⁴. Likewise, in his *Natural History* Pliny the Elder³⁵ (AD 23/24 – AD 79) noted that the Romans highly valued plants whose roots produce resinous gum growing in Armenia, among them a plant called *laserpitium*.

In the Armenian writings, there are various names derived from *Tsaghik*, therefore it can be assumed, that even in the early Middle Ages, the Armenian scientists not only recognized it, but also had a clear understanding of its varieties and prevalence. Thus, the terms *Tsaghik*, *Tsaghik* disease, child *Tsaghik*, man *Tsaghik*, animal *Tsaghik*, *Tsaghik* mark, *Tsaghik* marking and their variants all refer to *Tsaghik*³⁶.

Each of these terms has its own special meaning: while the terms man *Tsaghik*, child *Tsaghik*, *Tsaghik* disease and *Tsaghik* referred to humans, animal *Tsaghik* and animal death referred to domestic animals (mainly goat or sheep). We could therefore speculate that *Tsaghik* was also widespread among animals³⁷. Also, child *Tsaghik* is etymologically attributed to the prevalence of this disease mainly among young children. It is known that the majority of people infected with *Tsaghik* in ancient times were young children and their high mortality rate caused it to be called child *Tsaghik* or infants' disease. The medical terms pus (Arm: ժւհր [zhahr]), mould (Arm: բորբոս [borbos]) and gangrene (Arm: փտություն [ptutyun]) are also related to the classification of *mould diseases*.

It should be noted that the most prominent representative of medieval Armenian medicine, the founder of the Armenian classical medical school, Mkhitar Heratsi³⁸, demonstrated a unique approach to the classification of mould diseases.

³³ Tacitus Publius Cornelius – Roman historian and politician of the first and second century AD. See: TACITUS CORNELIUS, *Foreign Sources about Armenians*, vol. III, *Latin Sources*, Yerevan 1941, p. 55–57; S. VARDANYAN, *The History...*, p. 30–31.

³⁴ Tacitus *Annals* XII, 51 uses the words *agrestia medicamina*, CORNELIUS TACITUS, *Annales ab excessu divi Augusti*, ed. Ch.D. FISHER, Oxford 1906, <https://www.perseus.tufts.edu/hopper/text?doc=Perseus%3atext%3a1999.02.0077> [7 III 2024].

³⁵ Pliny the Elder, *Natural History* XIX, 15, quoted from the Bostock translation as presented on Perseus <https://www.perseus.tufts.edu/hopper/text?doc=Perseus%3atext%3a1999.02.0137%3Abook%3D19%3Achapter%3D15> [7 III 2024]. See also A. TOROSYAN, *Armenia's Medicinal Plants*, Yerevan 1983, p. 4.

³⁶ The Haykazyan Dictionary (Dictionary of Armenian), which summarizes the entire vocabulary of Armenian manuscripts and ancient Armenian bibliography and is an irreplaceable guide in the field of research in various fields of Armenology, has placed the following semantic usages extracted from various bibliographic sources under the entry *Tsaghik*: “Children's disease that produces red blisters”, “Animal Epidemic, and Child *Tsaghik*”, “On *Tsaghik* and Epidemic”, “Give Mercy to All in Danger of *Tsaghik*”, “Heal Eveyone Suffering from *Tsaghik*”. See: *A New Dictionary of the Haikazian Language*, ed. G. AVETIKIAN, Kh. SURMELIAN, M. AUGERIAN, Venice 1836, p. 1023–1024.

³⁷ A.B. ALEKSANYAN, *General and...*, p. 736.

³⁸ Mkhitar Heratsi was born in 1120 in the region of Khoy in present-day Iran (formerly known as Her, Persian Armenia).

He explained these diseases through the decay of four fluids or humors – blood, mucus, yellow and black bile³⁹. In the section “Mould Fevers” of his work *Consolation of Fevers*, M. Heratsi described the fever, typhoid and hemorrhagic diseases, plague, natural smallpox, measles, and the infectious nature of mould fevers, especially typhus.

On the occasion of one of the mould fevers, M. Heratsi warned to stay away from those infected to be free from infection. He was convinced that animals could also spread infection, therefore, only the milk of healthy animals should be consumed. This was a new perspective in the medical field of the time. It is interesting to note, however, that the word *Tsaghik* which originally meant flower in CA was used to describe characteristics of this disease. The word *Tsaghik* is used amongst many related fields, which could be translated to, flowered (mouldy), blossom, flowery, flower stricken, bloomed face (a face covered in rash), pocked (pock-marked), but also wine flower (mould that grows on the surface of wine, vinegar, beer and other liquids), bloomed wall (mouldy from moisture) and copper flower (a green layer forming on the surface of copper).

Moreover, we observe that ritual fasting was thought to have had a preventative effect. Here, multiple traditions may have had a part in the development of this measure. Both in Roman Catholic and some Orthodox churches, ritual fasting on Wednesday and Friday was, and to some extent still is, practiced. A potential preventative effect on the spread of infectious disease could have underlined the importance of observing these religious rules. But what is more, is that there may have been a medical justification for this intermittent fasting.

Rhazes⁴⁰, in his groundbreaking treatise *On Smallpox and Measles* describes a sweet, indulgent diet as one of the main predisposing factors for smallpox: *The bodies most disposed to the Small-Pox are [...] those that are very fond of sweet things, especially, dates, honey, figs, and grapes, 3 and all those kinds of sweets in which there is a thick and dense substance, as thick gruel, 3 and honey-cakes, 4 or a great quantity of wine and milk*⁴¹. It is very likely that Rhazes observed this correctly, even if the reasoning behind his assumptions may have been false. In other words, while humoral imbalance as described in his work did not exist, it is safe to assume that the disease he named smallpox did in fact affect primarily people with

³⁹ M. HERATSI, *Consolation of Fevers*, Venice 1832, p. 150, <https://armunicat.nla.am/cgi-bin/koha/opac-MARCdetail.pl?biblionumber=491456> [24 X 2024].

⁴⁰ Abu Bakr Mohammad Zakariyā Rāzī (Persian: ابوبکر محمد زکریای رازی Abūbākr Mohammad-e Zakariyā-ye Rāzī, also known as the Latinized Rhazes or Rasis), 866, Ray, Abbasid Caliphate – October 15, 925, a medieval Persian encyclopaedic scientist, physician, alchemist, philosopher, an important figure in the history of medicine. He also wrote works on logic, astronomy, linguistics. See: RĀZĪ, ABŪ BAKR MUḤAMMAD IBN ZAKARĪYĀ, FUAT SEZGIN, MĀZIN ‘AMĀWĪ, C. EHRIG-EGGERT, E. NEUBAUER, *Muḥammad ibn Zakariyā’ ar-Rāzī (d. 313/925). Texts and Studies*, Frankfurt am Main 1999. See also: <https://archive.org/details/39002086344042.med.yale.edu> [7 III 2024].

⁴¹ *A Treatise on the Small-Pox and Measles...*, 2, 1.

an unhealthily sweet tooth. Working with Rhazes' treatise poses its own potential problems of retrospective diagnosis and translation. It is, however, important to stress that he lived in a geographic area that was adjacent to Armenia and in the 9th to 10th century AD.

Today, we are aware of a clear connection between hyperglycemia and an impaired immune response to viral infection. While it is best known in the general population in connection with Covid-19, it has also been observed in the recent mpox outbreak⁴². Intermittent fasting as described in our Armenian sources would likely lower blood glucose. It is very well possible that our Armenian sources and traditional remedies capture a similar mechanism, in which potential vectors of disease, the mothers, are subjected to intermittent fasting to lower the chances of developing *Tsaghik* and infecting their children, who are particularly vulnerable.

3.2. Detecting the earliest testimonies of *Tsaghik*

The earliest known reference to *Tsaghik* as a disease is attributed to Anania Shirakatsi, a renowned Armenian astronomer, mathematician, philosopher, and scientist who lived in the 7th century. Anania Shirakatsi, a 7th-century great Armenian thinker is considered the founder of Natural Sciences in Armenia. In order to deepen his knowledge to continue his studies, he studied and traveled for 11 years in advanced Byzantine scientific and educational centers, a significant part of which was with the famous Greek scientist Tychikos⁴³, where he mastered numerology and acquired knowledge of many sciences. He was engaged in philosophy, astronomy, geography, mathematics, chronology and alchemy. A great number of Shirakatsi's works dedicated to various fields of science have reached us.

In his renowned work, the *Qnnikon* (also called *Chronicle* or *Chronicon*), 667 AD, alongside his works on astrological, numerological, chronological and philosophical issues, Shirakatsi placed great importance on natural science works, among them also materials on medicine. There he mentions *Tsaghik*, referring to it as "animal death and child *Tsaghik*". It is evident that Shirakatsi was well aware of *Tsaghik*.

Unfortunately, Anania Shirakatsi's *Qnnikon* has not come down to us in its entirety, but information on Anania Shirakatsi's medical and pharmacological experience has been preserved within Armenian writings. Thus, a variety of *Tsaghik* disease is mentioned in the *New Dictionary of the Haykazian Language*, where the entry for *Tsaghik* as in the CA word for flower draws on Anania Shirakatsi's work, making reference to "animal death and child *Tsaghik*"⁴⁴. Probably, the authors of the Haykazian dictionary had at their disposal Shirakatsi's *Qnnikon* or another

⁴² J.A. RUIZ-PACHECO, L.A. CASTILLO-DÍAZ, R. ARREOLA-TORRES, S. FONSECA-CORONADO, B. GÓMEZ-NAVARRO, *Diabetes mellitus. Lessons from COVID-19 for Monkeypox Infection*, PCD 17.2, 2023, p. 113–118.

⁴³ R.H. HEWSEN, *Science in Seventh-Century Armenia. Ananias of Sirak*, Is 59.1, 1968, p. 32–45.

⁴⁴ See: *A New Dictionary of the Haikazian...*, p. 1001–1002 and 17.

work deriving from it, from which they took the data. We hope that in the future, a complete copy of Shirakatsi's *Qnnikon* will be found, and it will be possible to more fully recover Shirakatsi's work on medicine and the natural sciences. But, to our knowledge this is the first attested mention of *Tsaghik* as a disease. No disease resembling *Tsaghik* or indeed *Variola* is convincingly described in ancient Greek sources⁴⁵. Insofar, the first convincing mention of what is perceived to be a precursor of *Variola* comes from Rhazes, the 10th century AD source mentioned above⁴⁶.

It is known that Anania Shirakatsi was also a practitioner of herbal medicine. According to oral traditions passed down to us, Anania Shirakatsi personally participated in the search for rare types of medicinal plants, including *hamaspyur* (Arm: Համասփյուր) and *upan* (Arm: ուպան)⁴⁷.

*Hamaspyur*⁴⁸ is commonly identified as *Lichnis* L.⁴⁹ *Hamaspyur* was known in different regions of Armenia as a healing agent. In his work *Ayrarat* Father of the Mkhitaryan Congregation Ghevond Alishan mentioned that *Hamaspyur* grew in a village called Dzoghakert or Dzorakert⁵⁰, noting that there were mythical stories about the miraculous properties of this plant. According to tradition, Anania Shirakatsi discovered and used it for medicinal purposes. There are also testimonies that Shirakatsi personally participated in the search for rare types of medicinal plants, including *Hamaspyur*, which proves that Shirakatsi also practiced herbal medicine⁵¹.

⁴⁵ Early modern discussions to this respect also led to no tangible results. See T.P. NEWFIELD, A.T. DUGGAN, H. POINAR, *Smallpox's Antiquity in Doubt*, JRA 35.2, 2022, p. 897–913.

⁴⁶ *Variola* has also been suggested to have been responsible for several major epidemics from antiquity onwards. See for instance G.F. GILLIAM, *Galen and the Antonine Plague*, AJP 82.3, 1961, p. 225–251. However, alternative aetiologies have been suggested, too, and it remains puzzling that this epidemic did not lead to clearly defined medical descriptions and medical treatises as for instance Rhazes' work. It is very well possible that the Antonine Plague consisted in fact of a number of separate illnesses affecting a weakened population. In any case, there is no continuity in the form of a dedicated medical term for this illness from the period.

⁴⁷ Gh. ALISHAN, *Ayrarat. Nature of Armenia*, Venice 1890, p. 123.

⁴⁸ The word *Hamaspyur* (Lat: *Lichnis* L.) is used as an adjective in the sense of extensive, large-scale, widespread. See H. GAYAYAN, *Dictionary Treasury of the Armenian Language*, Cairo 1938, p. 265. In the noun sense, it is a flower (plant) that sends out twelve branches and each branch has a flower of a different color, gives light to blind eyes, gives strength to the smell, and has other properties, too. See *Armenian Explanatory Dictionary*, ed. S. MALKHASEANTS, Yerevan 1944, p. 1176.

⁴⁹ See Matenadaran, MM MS 549, fol. 78b.

⁵⁰ Dzoghakert was a small town in ancient and medieval Armenia. Speaking about the Battle of Vardanants and referring to the activities of the governor of Armenia Vasak Syuni, the Armenian historian of the 5th century Yeghishe states: *He departed from the Christian covenant and destroyed many places in the Armenian kingdom, especially the winter quarters of the king, which were the army stations, Garni and Draskhanakert, Mets Dastakert, townships Dzoghakert and Kuash, Arutch, Ashnak and all of Aragatsotn...* He belonged to the Kamsarakan noble dynasty. YEGHISHE, *History of Vardan and the Armenian War*, Yerevan 1994.

⁵¹ Gh. ALISHAN, *Ayrarat...*, p. 123.



Fig. 2. The plant *hamaspram* (Arm: Համասպրամ). Gh. ALISHAN, *Hayapatum. Historians and Histories of Armenia*, vol. II, Venice 1901, p. 124.

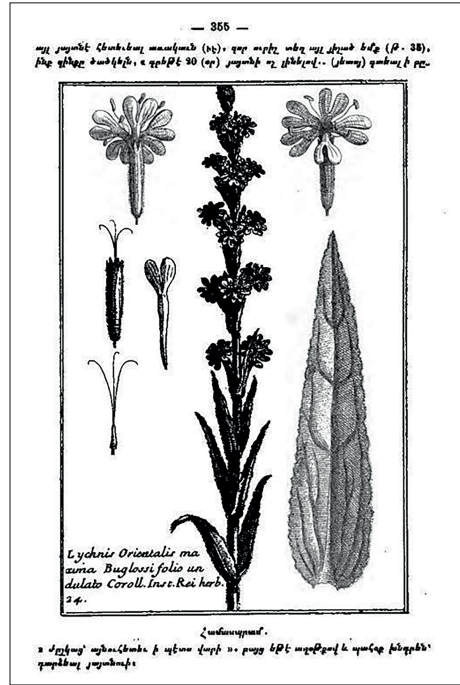


Fig. 3. Stamens, leaves, and flowers of *Hamaspram* with separate components. Gh. ALISHAN, *Haybusak or Armenian Botanical Terms*, Venice 1895, p. 355.

3.3. Examining the *Tsaghik* clinic and preventive measures in Grigor Magistros Pahlavuni’s letters

Grigor Magistros Pahlavuni⁵², a prominent Armenian scientist who lived in around 990–1058 AD, played a significant role in the advancement and dissemination of the medieval Armenian medical culture and medical science. He has left behind an impressive legacy of independent and translated works, comprising

⁵² Grigor Magistros Pahlavuni, also known as Grigor Magistros Bjnetsi, was a scientist, philosopher, poet, political and military figure. He was the son of General-in-chief Vasak Pahlavuni. See L.G. KHACHERIAN, *Grigor Pahlavuni Magistros. Life and Activity*, Los Angeles 1987. He received his primary education at Ani school then studied in Constantinople. Together with his uncle, General Vahram Pahlavuni, he fought against internal and external enemies and contributed to the strengthening of the Bagratuni Dynasty. In 1045 after the arrest of Gagik II by the emperor Constantine IX Monomachos in Constantinople, he surrendered his territories to Byzantium, receiving estates in Southern Armenia and Mesopotamia instead. The Byzantine emperor awarded him the title of a *Magister*, and in 1048 appointed him governor of Southern Armenia and Mesopotamia.

a collection of more than eighty letters. Magistros' letters, primarily focused on religious, philosophical, family, and personal matters, also provide insights into the prevailing attitudes and values of the time, as well as medical prescriptions. His letters are particularly important because of their focus on general and herbal medicine. In his letters Magistros also acts as a well-informed doctor and scientist of Greek medicine.



Fig. 4. *Grigor Magistros and Manuche*: 18th-century miniature.

See V. VARDANIAN, *Grigor Magistros' Political Creed*, Baz 163, 2005, p. 364–378. Grigor Magistros Pahlavuni was one of the most educated people of the time, left a significant mark in the history of medieval Armenian culture, contributed to the development of science and literature. He founded a school-seminary, and taught rhetoric, philosophy, grammar, mathematics. St. Astvatsatsin, Monastery of Bjni, St. Grigor Lusavorich Church of Kecharis Monastery, St. All Savior Church of Havuts Tar Monastery and other monuments were built on his initiative. See H. BARTIKYAN, *On the Issue of Political Orientation of Grigor Magistros. Pages of the History and Philology of the Armenian People (Collection of Articles)*, Yerevan 1971, p. 63–72.

One of the letters, for example, is addressed to the Byzantine physician Kyurakos⁵³. During a scientific debate with him lasting several years, Magistros⁵⁴, demonstrates his profound knowledge in medicine and his extensive knowledge of the works of Plato, Hippocrates, Galen, Asclepiades, Nemesios of Emesa⁵⁵. Some of the Magistros' letters are dedicated to his complicated relationship with the Armenian King Gagik II; having referred to the King's health problems⁵⁶ in one of his letters. There are letters devoted almost entirely to medicine⁵⁷, providing a comprehensive lecture on the functions of the digestive system in another letter.

Magistros taught at the university he founded, where he had many students. Medical sciences held a prominent place among the other disciplines taught. Magistros was not only a medical theoretician but also a practicing physician, as evidenced by the letters where he provided advice on medical matters. In a letter written to Sargis Vardapet, priest of Saint Karapet Monastery⁵⁸, who was suffering from a fever, Magistros not only gave advice, but also explained to him the nature of the disease and the potential consequences it could entail. Here he described the degree of the danger of the disease in detail, identified it as a type of chronic devastating fever, and proposed a course of action, specifically "letting blood from the right arm", for recovery. Additionally, he recommended sour and warm products as medicinal food and as medicine, he suggested using the seeds of a plant

⁵³ This name could refer to the rather common Greek name Kyriakos.

⁵⁴ According to some researchers Grigor Magistros had a comprehensive understanding of ancient medicine, and not only as a theoretician but also as a practical physician. While some experts argue that Magistros may not have been a physician in the traditional sense, he possessed a diverse range of knowledge in the field. However, there is a dominating opinion that Magistros was not solely a philosopher-scientist preoccupied with theoretical issues but also a practicing physician. See K. KOSTANIANTS, *Grigor Magistros'...*, p. 45.

⁵⁵ Nemesios of Emesa (around 350–420) was a philosopher and a bishop of the city of Homs, Syria. Scant information has been preserved regarding the life and activity of Nemesios of Emesa. It is speculated that he lived in the second half of the 4th and the beginning of the 5th centuries. Two facts are known about him: he served as a bishop of the city of Emesa and authored the book *On Human Nature*, which influenced the Armenian philosophical thought of the Middle Ages and the 17th–18th centuries, especially the views of Hovhan Vorotnetsi. See H. MIRZOYAN, *Simeon Dzhugayetsi*, Yerevan 1971, p. 35–36, 64; G.H. GRIGORYAN, *The Philosophical Teaching of Hovhan Vorotnetsi*, Yerevan 1980, p. 35–36; S. AREVSHATYAN, S. LALAFARYAN, *Works of Hovhan Vorotnetsi "About Beginnings"*, vol. III, Yerevan 1956, p. 344. Earliest information about Nemesios is known from the works of the 7th century thinkers Maxim the Confessor, Anastasius of Sinai and the 10th century Syrian thinker Moses Bar Cephass' work *On Paradise*. See: S. ZAKARYAN, *Nemesios of Emesa and Hovnan Vorotnetsi (Philosophical Relations)*, Yerevan 2017, p. 3–19.

⁵⁶ Mag. 61.

⁵⁷ Mag. 60, 61, 83.

⁵⁸ Saint Hovhannes Karapet Monastery is located in Ararat region, Republic of Armenia, 1 km North-East of Jnjrlu village. Urtsi mountain range spreads around the monastery, which lies on the Southern plateau of the mountain range. According to one of the inscriptions preserved on the walls of the monastery, the Orbelian princes founded the monastery at the beginning of the 14th century. It served as the cemetery of the Orbelian dynasty. Gh. ALISHAN, *Ayrarat...*, p. 445.

called *Laktuk* (Arm: լակտուկ [Laktuk; Lat: lactucarium, Eng: lettuce opium⁵⁹]). *A thousand dishes are called maroulli in Greek, which means that it must be eaten from May to July, and not after that*⁶⁰.



Fig. 5. *Lactucarium* (Lat: *Lactuca virosa* [Lettuce opium]).

Moreover, Magistros also describes the medicinal significance of the plant. According to him, lettuce has the properties of purifying the blood, numbing, relaxing, as well as “flattening and swelling the bowels”:

If its bark is white, then it induces weakness, which is very conducive to sleep. It has often been used for patients with injuries that developed fever and was advised to cover the wounds with them. Furthermore, if the lettuce seeds were mixed with saffron (Arm: զաֆրան [zaf-ran]) and the mixture was applied to the patient’s forehead, it would prevent the inflammation of a wound.

⁵⁹ Lactucarium is the milky fluid secreted by several species of lettuce, especially *Lactuca Virosa*, usually from the base of the stems. It is known as lettuce opium because of its sedative and analgesic properties. It has also been reported to promote a mild sensation of euphoria. Because it is a latex, lactucarium physically resembles opium, in that it is excreted as a white fluid and can be reduced to a thick smokable solid. See A. TROJANOWSKA, *Salata Lacuta sp. jako roślina lecznicza w badaniach polskich XIX-wiecznych farmaceutów i lekarzy*, KHNT 50.3–4, 2005, p. 123–134; C. ADAMS, *Is Iceberg Lettuce a Drug?*, 2005, <https://www.straightdope.com/21343701/is-iceberg-lettuce-a-drug> [14 II 2024]; *The British Pharmaceutical Codex 1911. The Plants*, <https://www.henriettes-herb.com/eclectic/bpc1911/lactuca.html> [14 II 2024].

⁶⁰ K. KOSTANIANTS, *Grigor Magistros’...*, p. 45. The Greek word *μαιούλλια maioullia* or *μαρούλλια maroullia* has been interpreted to refer either to lettuce or salad. The word is very common, and it is very well possible that its colloquial meaning differed across time and geographic region.



Fig. 6. The flowers, leaves, and stamens of the *Lactucarium*.
The flowers are yellow.

Hence it was advised not only for patients suffering from fever but also to prevent further inflammation of the wound⁶¹.

Some letters of Gregor Magistros are primarily didactic and aim to inform, explain, and teach about issues related to medical science. In this respect, the personal and intimate letters dedicated to the illness and death of his young son, 18 (11), 68 (30), 69 (25), 70 (6), where he expressed his deep parental grief are of significant importance as he wrote: *In lamentation and deprivation⁶², mourning and tears, sorrow and grief... because having his memory in front of my eyes, it is not forgotten...*⁶³

⁶¹ *Ibidem*.

⁶² A garment of coarse cloth made of goat's hair worn by hermits and mourners.

⁶³ *Ibidem*.



Fig. 7. *Physicians examining a patient:* Gagik Hetumyan Medical Book, Library of St. Hakobyan Monastery of Jerusalem, MS 370, 12th century.

Further to this Grigor Magistros's very personal and intimate letter addressed to Father Sargis of Saint Karapet Monastery and other priests presents the ultimate importance in the understanding and history of *Tsaghik* as he extensively described its manifestation and course using a detailed medical vocabulary. His son was also suffering from this disease.

He wrote:

He was inflicted by a sickness of continuous fever, and immediately the vapor of the excessively agitated surge of the boiling blood ascended to the cerebellum (or brain), drove him mad (lit. away from his consciousness) and made us unknown [to him]. And this [news] reached [me] in a single of Agarak, and the Holy Spirit stopped (lit. held) me showing that I am aware of the supreme royal command, and I was embarrassed more than [because of] the threat of the command of the royal request. And the heat of the fever being inflamed annoyed him, while his mother was informed and came to him. And how can I consent to write to you about the pain of the burning of our parental misfortune? For the more you are burning with us, together with all the brothers bearing Christ in their soul⁶⁴.

⁶⁴ *Ibidem*, p. 34 (352).

Spending days at his son's bedside, he wrote with the pain of a caring father:

Then the inflammation of fever burned and grew its *Tsaghik* sown by the progenitor [i.e. Adam] from his labor... And of what quantity! And of what quality! ...like a heap of stones, stretched out close to each other, dense and uniform, not letting room on him, to the extent of discovering a place of needlepoint, and swollen like a waterskin filled with air by impetuous blowing, made him soon speechless and invisible for the eyes, so that everybody got hopeless concerning his life⁶⁵.

He mourned deeply over his young son's death due to the illness *Tsaghik* as evidenced by his correspondence with the abbot of Sevan⁶⁶.

Grigor Magistros's knowledge and personal experience with *Tsaghik* may have, in some way, been related to the parental pain of his son's loss. In his letters, especially those devoted to medicine, Magistros demonstrates professional abilities and skills in addressing medical issues. We see the image of an experienced and consulting doctor with professional abilities and skills, who was familiar with the care of bed-ridden patients, prevention, and treatment of diseases, as well as was with herbal medicine.

3.4. Translating medicinal plant names

The translation of premodern texts can be complex when it comes to the names of pharmaceutical ingredients or the names of diseases. However, we took all necessary care in our work. We used etymological⁶⁷, bilingual, and multilingual dictionaries⁶⁸. We are confident that the translations of plant names are accurate as these are very common plants in which we can expect to see a continuity of use and nomenclature throughout the centuries⁶⁹. We also sourced the image of the plant *Lichinis* L.⁷⁰ from Father Ghevond Alishan's book *Haybusak*, anticipating its potential significance to the international multidisciplinary scientific community.

Hamaspyur (Arm: Համսպիւր; Lat: *Lichinis* L.) is mostly associated with Anania Shirakatsi. There are even legends regarding himself and the plant, for instance whether Shirakatsi was aware of its mountainous habitat and the specific

⁶⁵ *Ibidem*.

⁶⁶ Lake in Armenia. See K. KOSTANIANETS, *Grigor Magistros's...*, 18, 68–70.

⁶⁷ R.S. GHAZARIAN, *Armenian-Latin-Russian-English-French-German Dictionary of Plant Names*, Yerevan 1981, p. 181; H.T. GAYAYAN, *Dictionary Treasury of the Armenian Language*, Alexandria 1935, p. 32.

⁶⁸ Gh. ALISHAN, *Haybusak or Armenian Botanical Terms*, Venice 1895, p. 706.

⁶⁹ A.K. BEDEVIAN, *Illustrated Polyglottic Dictionary of Plant Names in Latin, Arabic, Armenian, English, French, German, Italian and Turkish Languages Including Economic, Medical, Poisonous, and Ornamental Plants and Common Weeds*, Dip. H.A. Medbouly Library, Egypt 1994, 1711 Illustrations, p. 1146.

⁷⁰ CHEREDJIAN G. ARCHBISHOP, PARAMAZ Kh. TONIKIAN, ARTASHES DER KHACHATURIAN, *A New Dictionary of the Armenian Language*, Beirut 1992, p. 1130.

duration of its yearly growth. The legend also tells that the flower of plant *Hamaspuyur* had 12 petals, and each petal was painted in a single color, it gives light to blind eyes, and its smell gives power. That is the reason why Shirakatsi called it *Hamaspuyur*, which translates to spread or painted in different colors⁷¹.

*Khambek*⁷², a plant described in the dialect of Van⁷³, is also mentioned as the equivalent of *Hamaspuyur*. In at least 9 manuscripts present in the Yerevan Matenadaran, a tale about the *Hamaspuyur* has been preserved entitled “History of the flower *Hamaspuyur*” or “About Flower”⁷⁴, (also known as *Hamaspran* or *Hamaspram* S). Avdalbegyan writes about this in his article of the same title⁷⁵.

A tale about the *Hamaspuyur* says:

If you take it close to your ear, you will hear a voice from above and a dialect, and will understand all the languages people speak and identify the sounds that animals, beasts and birds make, take it close to your nose and you will smell the fragrance of Heaven, take it close to your tongue and you will talk in all languages and dialects, you will attain wisdom, take it closer to your fingers and you will master all trades (or arts), and many other mighty miracles⁷⁶.

In another source cited by Avdalbegyan, additional new properties attributed to a potential equivalent of *Lichinis* L. are listed: *Hamaspran* is the best to choose, because it heals the sick and gives courage, gives the grace to walk on the sea and fills the ignorant with wisdom⁷⁷.

According to Davit Saladzorts⁷⁸, a 17th-century Armenian minstrel, *Hamaspuyur* was revered as the jewel of the Drunk Mountains situated within the Armenian Highlands, specifically in Upper Basean (Western Armenia prior to the Armenian Genocide), near the Holy Mary Monastery. In his poem “Praise to Flowers”, which celebrates the awakening of nature. In the praise of flowers, Davit Saladzorts⁷⁹ also mentions *Hamaspuyur*, which “blooms once in 12 years”⁷⁹.

⁷¹ *Armenian Explanatory Dictionary...*, vol. III, no. 3, List 1, p. 28.

⁷² *A Dialect Dictionary of the Armenian Language*, vol. II, Yerevan 2002, p. 276.

⁷³ Sity in Vestern Armenia (Ottoman Empire).

⁷⁴ Matenadaran after Mesrop Mashtots, MM MS 6488, MS 5747, MS 5616, MS 7993, MS 7100, MS 549, MS 8737, MS 10020, MS 7085. See also: N. MAR, *Collection of Fables by Vardan*, vol. II, Saint-Petersburg 1894, p. 300.

⁷⁵ S. AVDALBEKYAN, *History of Lichinis L.*, HPhJ 3, 1976, p. 258–259.

⁷⁶ M. GOSH, *Fables. The Story of the Selection of the King of Plants*, Yerevan 1951, p. 61.

⁷⁷ *Ibidem*.

⁷⁸ David Saladzorts⁷⁸ (dates of birth and death are unknown) was born in the village of Saladzor, Karin province (Western Armenia), from which the name Saladzorts⁷⁸ originated. He was also called Vorbik. He was a clergyman.

⁷⁹ K. HAKOBYAN, S. MELIK-BAKSHYAN, K. BARSEGHYAN, *Dictionary of Place Names of Armenia and Neighboring Regions*, vol. II, (D–K), ed. L. G. MANUKYAN, Yerevan 1986, p. 152–199.

The serpent king⁸⁰, as white as snow,
is drawn to [*Hamaspyur*] and derives strength from its fragrance.

Hamaspram was also mentioned by Gh. Alishan in his book *Ancient Beliefs or Pagan Religion of Armenians*⁸¹. While we cannot conclude with certainty that all of these mentions refer to one and the same plant species from a modern botanical perspective, it is clear that there is a certain continuity within Armenian thought that a plant that may also be referred to with synonyms was a potent medicinal ingredient.

4. Conclusion

A comprehensive study of the material revealed that the origins of the *Tsaghik* disease in Armenia trace back to the pagan period, intricately interwoven with pagan beliefs and traditions through mythological and religious layers. While *Tsaghik* could have meant different things to different authors over the centuries and while it may well have been caused by different agents from a modern biomedical perspective⁸², there is clear congruence in several descriptions of the diseases described in the Middle Ages. Moreover, they proposed certain methods for their prevention, control and treatment. Upon analyzing chronological data, we made a significant observation: the name of the disease *Tsaghik* was documented in medieval Armenian manuscripts as early as 667⁸³, which pre-dates Rhazes. Initial surveys suggest that many more testimonies and factual data on the development of this disease are extant in the manuscript holdings of the Yerevan Matenadaran.

Our study also yielded intriguing data on the early treatment of *Tsaghik*. Herbal treatments are very common in premodern medicine, for instance in the Islamic and Greek sphere. Calling an eruption on a surface efflorescence, which relates to

⁸⁰ The birth of the serpent snake is associated with a bird called *qajahav* (from the Armenian word *puq*, meaning brave, as if synonymous with the word *artavazgahav*, which originates from Artavazd's name: as if the king's bird chained by evil spirits). This bird (*iris*), which was worshiped by the Egyptians, is a serpent-chaser. Some believe that it is also a snake-eater, as if the serpent king is formed in its egg. See: M. QAJUNI, *Dictionary of Arts and Sciences*, Venice 1891.

⁸¹ Gh. ALISHAN, *Ancient Beliefs or Pagan Religion of Armenians*, Venice 1910.

⁸² Even in modern days there have been instances in which illnesses that were well known to the local doctors have been misdiagnosed. See for instance R. RANDREMANANA *et al.*, *Epidemiological Characteristics of an Urban Plague Epidemic in Madagascar, August–November, 2017: an Outbreak Report*, LID 19.5, 2019, p. 537–545.

⁸³ A potential earlier description of smallpox dating to the late sixth-century Europe has been described by T.P. NEWFIELD, 'Verbalist Ingenuity' and the Evidential Basis for Virgin-Soil Smallpox Epidemics in the Sixth Century. From Iona to Şan 'ā', [in:] 'With Our Backs to the Ocean'. *Essays in Memory of Alasdair Ross*, ed. R. ORAM, Turnhout 2023, p. 25–82. This paper analyses instances of pustules and similar skin manifestations mentioned in a variety of sources.

flowers, also does not come across as unusual. However, in this case, we have an unusual combination of a disease called *Tsaghik*, which translates to flower, and a folklore prevention and treatment that is largely flower based. Here, the flowers are in close proximity to persons who are most likely to have a close contact with children, who were seen as at particularly high risk when infected with this disease. It is notable that the flowers were then taken to church, one of the main areas where people would congregate, which would put them at risk of contagion. We hypothesize that these flowers were meant to purify the air, and while they were part of folklore and religious ritual, this would place them at a similar level as a preventative pharmaceutical intervention.

Bibliography

- ADAMS C., *Is Iceberg Lettuce a Drug?*, 2005, <https://www.straightdope.com/21343701/is-iceberg-lettuce-a-drug> [14 II 2024].
- ALEKSANYAN A.B., *General and Special Epidemiology*, Yerevan 1960.
- ALISHAN G., *Ancient Beliefs or Pagan Religion of Armenians*, Venice 1910.
- ALISHAN Gh., *Ayrarat. Nature of Armenia*, Venice 1890.
- ALISHAN Gh., *Hayapatum. Historians and Histories of Armenia*, vol. II, Venice 1901.
- ALISHAN Gh., *Haybusak or Armenian Botanical Terms*, Venice 1895.
- AREVSHATYAN S., LALAFARYAN S., *Works of Hovhan Vorotnetsi "About Beginnings"*, vol. III, Yerevan 1956.
- Armenian Explanatory Dictionary*, vol. III, ed. S. MALKHASYANTS, Yerevan 1944–1945.
- Armenian Soviet Encyclopedia*, vol. II, ed. V. HAMBARDZUMYAN, K. KHUDAVERDYAN, Yerevan 1976.
- ARTSRUNI TOVMA AND ANONYMOUS, *History of the Dynasty of Artsruni*, trans. V. VARDANYAN, Yerevan 1978.
- AVDALBEKYAN S., *History of Lichinis L.*, "Historical and Philosophical Journal" 3, 1976, p. 258–259.
- BARTIKYAN H., *On the Issue of Political Orientation of Grigor Magistros. Pages of the History and Philology of the Armenian People (Collection of Articles)*, Yerevan 1971.
- BDOYAN V., *The Agricultural Culture in Armenia*, Yerevan 1972.
- BEDEVIAN A.K., *Illustrated Polyglottic Dictionary of Plant Names in Latin, Arabic, Armenian, English, French, German, Italian and Turkish Languages Including Economic, Medical, Poisonous, and Ornamental Plants and Common Weeds*, Dip. H.A. Medbouly Library, Egypt 1994.
- BONCZAROWSKA J.H., SUSAT J., MÜHLEMANN B. *et al.*, *Pathogen Genomics Study of an Early Medieval Community in Germany Reveals Extensive Co-infections*, "Genome Biology" 23, 250, 2022, <https://doi.org/10.1186/s13059-022-02806-8>
- The British Pharmaceutical Codex 1911. The Plants*, <https://www.henriettes-herb.com/eclectic/bpc1911/lactuca.html> [14 II 2024].
- BUZAND P., *History of Armenians*, trans. S. MALKHASYANTS, Yerevan 1968.
- BYZANTINE N., *Tovma Artsruni and Anonymous Artsruni Are Two Other Historians*, "Bazmavep" 1905, p. 227–233.

- CHEREDJIAN G. ARCHBISHOP, PARAMAZ Kh. TONIKIAN, ARTASHES DER KHACHATURIAN, *A New Dictionary of the Armenian Language*, Beirut 1992.
- CORNELIUS TACITUS, *Annales ab excessu divi Augusti*, ed. Ch.D. FISHER, Oxford 1906.
- A Dialect Dictionary of the Armenian Language*, vol. II, Yerevan 2002.
- GAYAYAN H., *Dictionary Treasury of the Armenian Language*, Cairo 1938.
- GAYAYAN H.T., *Dictionary Treasury of the Armenian Language*, Alexandria 1935.
- GHAZARIAN R.S., *Armenian-Latin-Russian-English-French-German Dictionary of Plant Names*, Yerevan 1981.
- GILLIAM G.F., *Galen and the Antonine Plague*, "American Journal of Philology" 82.3, 1961, p. 225–251.
- GOSH M., *Fables. The Story of the Selection of the King of Plants*, Yerevan 1951.
- GRIGORYAN G.H., *The Philosophical Teaching of Hovhan Vorotnetsi*, Yerevan 1980.
- HAKOBYAN K., MELIK-BAKHSHYAN S., BARSEGHYAN K., *Dictionary of Place Names of Armenia and Neighboring Regions*, vol. II, (D–K), ed. L.G. MANUKYAN, Yerevan 1986.
- HAKOBYAN T., *Historical Geography of Armenia*, ⁵Yerevan 2007.
- HAKOBYAN V., HOVHANNISYAN A., *The Memorial Books of Armenian Manuscripts of the 17th Century, (1621–1640)*, part B, Yerevan 1978.
- HERATSI M., *Consolation of Fevers*, Venice 1832.
- HEWSEN R.H., *Science in Seventh-Century Armenia. Ananias of Sirak*, Isis 59.1, 1968, p. 32–45, <https://doi.org/10.1086/350333>
- HORDEN P., *The Earliest Hospitals in Byzantium, Western Europe, and Islam*, "Journal of Interdisciplinary History" 35.3, 2005, p. 361–389, <https://doi.org/10.1162/0022195052564243>
- HOVNANYAN G., *Nerses the Great and his Influence on Armenia*, Vienna 1851.
- KHACHERIAN L.G., *Grigor Pahlavuni Magistros. Life and Activity*, Los Angeles 1987.
- KHORENATSI M., *History of Armenia*, introd. and trans. S. MALKHASYANTS, Yerevan 1997.
- KOSTANIANTS K., *Grigor Magistros's Letters*, Aleksandrapol 1910.
- LALAYAN E., *Non-Obligatory Fasting and Holidays*, "Ethnographic Journal" 10, 1903, p. 225.
- MALKHASYANTS S., *History of Armenians (Pavstos Buzand)*, Tbilisi 1941.
- MAR N., *Collection of Fables by Vardan*, vol. II, Saint-Petersburg 1894.
- Matenadaran, MM MS 549, MS 5616, MS 5747, MS 6488, MS 7085, MS 7100, MS 7993, MS 8737, MS 10020.
- MAYWALD M., RINK L., *Zinc in Human Health and Infectious Diseases*, "Biomolecules" 12.12, 2022, p. 1748, <https://doi.org/10.3390/biom12121748>
- MIRZOYAN H., *Simeon Dzhugayetsi*, Yerevan 1971.
- MKRTCHYAN S., *Armenian Festival and Ritual Culture*, Yerevan 2016.
- MÜHLEMANN B. et al., *Diverse Variola Virus (Smallpox) Strains Were Widespread in Northern Europe in the Viking Age*, "Science" 369, eaaw8977, 2020, <https://doi.org/10.1126/science.aaw8977>
- A New Dictionary of the Haikazian Language*, ed. G. AVETIKIAN, Kh. SURMELIAN, M. AUGERIAN, Venice 1836.
- NEWFIELD T.P., 'Verbalist Ingenuity' and the Evidential Basis for Virgin-Soil Smallpox Epidemics in the Sixth Century. From Iona to Šan'ā', [in:] 'With Our Backs to the Ocean'. Essays in Memory of Alasdair Ross, ed. R. ORAM, Turnhout 2023, p. 25–82, <https://doi.org/10.1484/M.EHNAW-EB.5.131270>

- NEWFIELD T.P., DUGGAN A.T., POINAR H., *Smallpox's Antiquity in Doubt*, "Journal of Roman Archaeology" 35.2, 2022, p. 897–913, <https://doi.org/10.1017/S1047759422000290>
- PARPETSİ G., *History of Armenia. A Letter to Vahan Mamikonyan*, new Armenian trans. and notes B. ULUBABYAN, Yerevan 1982.
- QAJUNI M., *Dictionary of Arts and Sciences*, Venice 1891.
- RANDREMANANA R. *et al.*, *Epidemiological Characteristics of an Urban Plague Epidemic in Madagascar, August–November, 2017: an Outbreak Report*, "The Lancet Infectious Diseases" 19.5, 2019, p. 537–545, [https://doi.org/10.1016/S1473-3099\(18\)30730-8](https://doi.org/10.1016/S1473-3099(18)30730-8)
- RĀZĪ, ABŪ BAKR MUḤAMMAD IBN ZAKARĪYĀ, FUAT SEZGIN, MĀZIN 'AMĀWĪ, EHRIG-EGGERT C., NEUBAUER E., *Muḥammad ibn Zakarīyā' ar-Rāzī (d. 313/925). Texts and Studies*, Frankfurt am Main 1999.
- RUIZ-PACHECO J.A., CASTILLO-DÍAZ L.A., ARREOLA-TORRES R., FONSECA-CORONADO S., GÓMEZ-NAVARRO B., *Diabetes mellitus. Lessons from COVID-19 for Monkeypox Infection*, "Prim Care Diabetes" 17.2, 2023, p. 113–118, <https://doi.org/10.1016/j.pcd.2023.01.008>
- TACITUS CORNELIUS, *Foreign Sources about Armenians*, vol. III, *Latin Sources*, Yerevan 1941.
- TOROSYAN A., *Armenia's Medicinal Plants*, Yerevan 1983.
- A Treatise on the Small-Pox and Measles by Abū Becr Mohammed Ibn Zacarīyā Ar-Rāzī (Commonly called Rhazes)*, trans. from the original Arabic W.A. GREENHILL, London 1848.
- TROJANOWSKA A., *Salata Lacuta sp. jako roślina lecznicza w badaniach polskich XIX-wiecznych farmaceutów i lekarzy*, "Kwartalnik Historii Nauki i Techniki" 50.3–4, 2005, p. 123–134.
- VARDANIAN V., *Grigor Magistros' Political Creed*, "Bazmevop" 163, 2005, p. 364–378.
- VARDANYAN S., *The History of Armenian Medicine. From Antiquity to the Present Day*, Yerevan 2000.
- VARDANYAN V.M., *About Several Place Names Mentioned in "History of the Dynasty of Artsruni"*, "Historical and Philosophical Journal" 1, 1973, p. 111–122.
- YEGHISHE, *History of Vardan and the Armenian War*, Yerevan 1994.
- YERETS M., *History of Saint Nerses Partev, the Armenian Catholicos*, vol. VI, Venice 1853.
- ZAKARYAN S., *Nemesius of Emesa and Hovnan Vorotnetsi (Philosophical Relations)*, Yerevan 2017.

Naira Hambardzumyan

National Academy of Sciences of the Republic of Armenia
Institute of Literature after Manuk Abeghian

Vardanush Postajyan

Matenadaran Mesrop Mashtots Institute-Museum
of Ancient Manuscripts of the Republic of Armenia

Barbara Zipser

Royal Holloway
University of London