



## Kumbyz (furnace) found in the medieval city of Kyshkala<sup>1</sup>

M. Yeleuov<sup>a</sup>, \*A.A. Moldakhmet<sup>b</sup>

<sup>a</sup>Al-Farabi Kazakh National University, Almaty, Republic of Kazakhstan

(Email: [mediareleyov@mail.ru](mailto:mediareleyov@mail.ru))

<sup>b</sup>Al-Farabi Kazakh National University, Almaty, Republic of Kazakhstan

(Email: [arhadkz@mail.ru](mailto:arhadkz@mail.ru)). \*Corresponding author: [arhadkz@mail.ru](mailto:arhadkz@mail.ru)

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### ABSTRACT

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Long-term studies of the medieval city of Kyshkala revealed a mausoleum, madrasahs, simple burials and living quarters built of ceramic bricks and the remains of cult and memorial construction sites. A number of studies were also conducted to find out where so many bricks were burned, and consequently, in 2019 brick-burning kumbyz (furnace) was found in the eastern part of Shahrستان in the medieval city of Kyshkala, dating back to the Golden Horde era, to the 13<sup>th</sup> and 14<sup>th</sup> centuries. Therefore, in the article, giving extensive definitions related to etymology (origin) of the word “kumbyz” for burning bricks, we will focus on the history of kumbyz of the medieval history of Kazakhstan, which had a direct impact on the prosperity of urban culture. The kumbyzes were found in the Chui region and such medieval cities as Aktobe, Sarayshyq, Zhaiyk, as well as in the medieval cities of middle and lower flows of Syr Darya. The article considers the history of discovering kumbyzes and the conducted archeological research, the first published results were supplemented with additional materials and a comparative chronological analysis.

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## Introduction

Cult objects of the Golden Horde era on the territory of Kazakhstan, such as mausoleums, madrasahs, burial places under mounds, memorial structures, cities, settlements, fortresses, caravan parks, eastern baths and public places are very concentrated. At present time, the archaeological study of these monuments and their introduction into scientific circle are one of the most difficult tasks. In addition, in the study of the monuments of the Golden Horde, the emergence, formation of cities and settlements, as well as the assessment of their history and development process are one of the most relevant issues, determining the characteristics of individual cities during the development period and identifying their similar features to other cities. Most of the cities of the Golden Horde era were located in the lower flows of the Syr Darya river and near the eastern Aral. This region was one of the political and cultural centers of high social importance for peoples in different historical periods. In the study of the history of the region, the monuments of the Golden Horde era are the main focus. One of the monuments of the Golden Horde era is the medieval city of Kyshkala (Barshynkent) (Fig. 1).



Fig 1. Medieval Kishkala in 2021

Medieval Kyshkala was first discovered by V.A. Kallaur in 1889 (Kallaur, 2011: 204-211), and in 1946 S.P. Tolstov (Kysh hill according to S.P. Tolstov) showed it between medieval Asanas and Zhent (Tolstov, 1948: 323). In the early 1990s, T. Mamiev conducted archaeological excavations and explorations in the lower flows of the river Syr Darya, and received the first information about its cultural life and economy (Mami, 2007: 69-70).

Further, the archaeological excavations in Kyshkala were carried out by the Turan archaeological expedition of the International Research Center “Archaeologist” (led by

Professor M. Yeleuov) under the order of the Municipal State Institution “On the protection of historical and cultural monuments of the Kyzylorda region” under the Department of Culture, Archives and Documentation of the Kyzylorda region in the period from 2018 to 2020. (Kyzylorda region, 2018<sup>2</sup>: 94; 2019<sup>3</sup>, 83; 2020<sup>4</sup>: 94).

At the beginning of 2021, archaeological research works in medieval Kyshkala were conducted by the university archaeological expedition and led by M. Yeleuov at Al-Farabi Kazakh National University within the framework of the scientific project “Medieval Kyshkala (Barshinkent) – in the context of urban culture in the Golden Horde era” for 2021-2023, by the order of the Ministry of Science and Higher Education (former Ministry of Education and Science) (Report on scientific research work, 2021: 113)<sup>5</sup>.

### Materials and research methods

From a methodological point of view, it is possible to find a solution to two main large-scale problems in the study of brick-burning kumbyz of the medieval period of Kazakhstan. One of them is to determine the exact historical period and assume the methods of the emergence, development and application of kumbyz technology in a certain period. The article is guided by the foundations of historical and comparative analysis based on general scientific principles. According to these principles, the actual time of the monument’s existence was determined, based on specific archeological methods and architectural laws. Theoretical and cognitive conclusions were made regarding the history of construction and formation of brick-burning kumbyz in Kazakhstan during this historical period.

### Study level of the topic

Although shapes of ancient furnaces found in the medieval history were square, square section, apple or pear-like, semi-circular arches separated the main channel in the middle of the combustion chamber, several thin channels spread to both ends, and the flame passed through them to the combustion chambers; this style is also preserved in rectangular furnaces dating back to the 11<sup>th</sup>-12<sup>th</sup> centuries. Due to the reduction of the flatness of the bases of the half-round arches of some furnaces, the channels are not deepened, and even the combustion chamber of some furnaces is made like a large open room (Kartaeva, 2021: 14). Furnaces in which the base of the arches were shortened, and the cavities for the flame without going deep into the wall were transferred to the combustion chamber preserved in the following centuries.

Although, the design of combustion chambers of furnaces belonging to the ancient era are rectangular, round or long, the main role was played by channels passing through the middle.

<sup>2</sup> Archaeological research in the village of Kyshkala in the Syrdarya District of Kyzylorda. 2018. Report on research works (interim). Almaty. 94 p.

<sup>3</sup> Archaeological research in the village of Kyshkala in the Syrdarya District of the Kyzylorda. 2019. Report on research work (interim). Almaty. 83 p.

<sup>4</sup> Archaeological studies in the village of Kyshkala in the Syrdarya District of the Kyzylorda. 2020. Report on research work (interim). Almaty. 94 p.

<sup>5</sup> Report on scientific-research work. 2021. № AP09260898 Medieval Kyshkala (Barshinkent): in the context of urban culture in the Golden Horde era (intermediate) under the grant funding program. Almaty. 113 p.

The heat of the fire from those channels passed through the holes to the combustion chamber. Holes between the burner and the combustion chamber were widely used in burning dishes, although they were rare in brick-burning furnaces in the Middle Ages.

Currently, a number of medieval brick-burning kumbyzes discovered in Kazakhstan are known. The earliest kumbyzes among them were discovered in Babish Molla, Taraz, Otyrar, Kuiryktobe, Sarayshyq, Zhaiyk, medieval cities Aktobe and Sortobe.

The size of the pottery burning furnace found in the Babish Molla Monument, Kyzylorda region, even goes back to ancient times. Larger furnaces discovered in this oasis from the settlement of potters have several holes through which the flame passes between burner and combustion chamber. These types of preserved furnaces belong to 4<sup>th</sup>-2<sup>nd</sup> centuries BC (Utubaev, 2016: 123).

For the first time in 1940, G.I. Patsevich revealed a furnace for burning bricks of the 11<sup>th</sup>-12<sup>th</sup> centuries from the medieval city of Taraz, which blows air through a pipe under the combustion chamber and raises the temperature to a high level (Patsevich, 1956: 73-86).

In 1950 G.I. Patsevich discovered the location of a brick-burning furnace during the excavations in the medieval city of Sarayshyq. The length of the stored combustion chamber of furnace is 4.5 m, the width is about 3.5 m that one end is washed by the Zhaiyk River. The main wall of this building has seven arches on one side and six arches on the other side. The thickness of the arch is 42-47 cm, the width of the cavity through which the fire heat passes is from 13 to 20 cm. Comparing the furnace with other ancient and medieval furnaces, the time of its existence is dated to the 12<sup>th</sup>-14<sup>th</sup> centuries (Patsevich, 1950: 221-224; Patsevich, 1957: 111-114).

In 1980, the expedition of the Al-Farabi Kazak National university determined the location of the brick-burning kumbyz, during the archaeological excavations carried out in Shahrstan, 30 m north of the citadel of the medieval city of Aktobe in the field season, (Shalekenov, 1981: 20-23)<sup>6</sup>.

The scientific work "Otyrar in the 13<sup>th</sup>-15<sup>th</sup> centuries" published in 1987, contains valuable information about several furnaces discovered in the city. The first is 0.5 km from the hill in the central part. The size of the combustion chamber of the furnace revealed from the south is 2.9x4.7 m. The width of the heat-conducting cavities of the six-arched brick furnace is 20-21 cm. This brick-burning furnace belongs to the second half of the 13<sup>th</sup> century and the middle of the 14<sup>th</sup> century. The second one consists of two layers (that is, a burner and a burning chamber), with a length of combustion chamber of 2.9 m and a width of 2.8 m dates from the second half of the 13<sup>th</sup> century and the first half of the 14<sup>th</sup> century. The third one, built on the lower cultural layer of the northern rabad in the 11<sup>th</sup>-12<sup>th</sup> centuries, consists of 10 arches, the thickness of the arches is 30 cm, the width of the cavity through which heat passes is 15-18 cm, the size of the fire chamber is 5x2.7 m. The fourth one placed by digging into the ground is 2 km west of the central part of Otyrar, the walls are made of mud and brick, the thickness of the arches is 25-26 cm, the width of the cavities is 20 cm, the size of the combustion chambers of two identical furnaces is 3.5x1.4 m. Furnaces belong to the second half of the 13<sup>th</sup> century and the first half of the 14<sup>th</sup> century. (Baipakov and others, 1987: 178-184).

<sup>6</sup> Shalekenov U.Kh., 1981. Report on the scientific-research work "Archaeological and ethnographic study of the Chu Valley" // Archive of the Institute of Archeology named after A.Kh. Margulan CS MES RK. Alma-Ata. f. 2, case. 76 p.



In 2001, in the course of archaeological research carried out in the east of Zhaiyk, the combustion chamber installed into the ground by digging has 8 arches, the length of stored combustion chamber is 4.9 m and the width is 3.25 m. The furnace dates back to the 13<sup>th</sup>-14<sup>th</sup> centuries (Baipakov and others, 2005: 89-91).

In 2012, a second furnace with preserved burner chamber was opened in the east of the city of Zhaiyk. Its dimensions dug into the ground: length is 4.76x3.6 m, the number of arches in the preserved part is seven on one wall, six on one wall, the distance between the cavities through which the heat of the fire passes is 25-32 cm, the furnace corresponds to the 13<sup>th</sup>-14<sup>th</sup> centuries (Kalmenov, 2013: 205-213).

In 2015, a senior researcher of the A.Kh. Margulan Institute of Archaeology E. Akymbek conducted cleaning works in order to obtain a special full-size plan and photo of a brick-burning furnace that was discovered in Shahrستان 30 km north of the citadel in the medieval city of Aktobe (discovered by an expedition of KazNU in 1980) (Fig 2).



**Fig 2.** Brick-burning sand (furnace). 2019

As a result, the place of furnace was identified, including 7.3 x 7.2 m installed excavation by digging the lower cultural layers when deepening it by 1.75 m. The walls were 5.8x5.8 m from the outside, and the thickness of walls from the northwest to the southeast were 1-1.8 m, thickness of the front and four sides were 0.65-1 m, a rectangular furnace, the combustion

chamber was not preserved, the remains of a six-arched dome were preserved on the walls on both sides of the combustion chamber (Akymbek, 2017: 76-84; Akymbek, 2017: 173-178).

In 2015, E. Akymbek determined the location of brick-burning furnace that was revealed because of research on the medieval Sortobe monument located on the left bank of the Karakonyz River that flows into the Shu River. The eastern part of the furnace, which is oriented from north to south was taken out of soil with the help of equipment and poured into the garden; and the western part was washed away by river water. Therefore, only the south-eastern corner part of the combustion chamber of the furnace has been preserved. The preserved length of the eastern wall is 2.6 m, the preserved length of the southern wall is 2 m. The preserved heights are 1-2.1 m. The inside of the structure was built with raw bricks measuring 41x20x7 cm, and the outside was covered with paksa. The thickness of the eastern wall, a small part of which has been preserved is 1.2 m. The base of the four-arched dome located on the eastern inner wall of the combustion chamber has been preserved. They became straight up to one meter, and then became smoothly arched. The thickness of arched domes is cognate 40-45 cm, they protrude 40 cm from the wall line (Akymbek, 2016: 134-139; Akymbek, 2017: 134-140).

In 2019, the head of the Turan archaeological expedition M. Yeleuov determined the location of furnace for burning pottery situated on the north-eastern bank of the octagonal mausoleum in the distance of 30 m. Thus, the area is 18x21 m, and the height is 1.8 m, rectangular in design, external length is 5.6 m and width is 4 m. It was opened in 2018 in the project of the 2nd excavation, according to the technical requirements of the excavations carried out in medieval Kyshkala, in order to identify the structures located in the eastern part of the town (Fig.3).

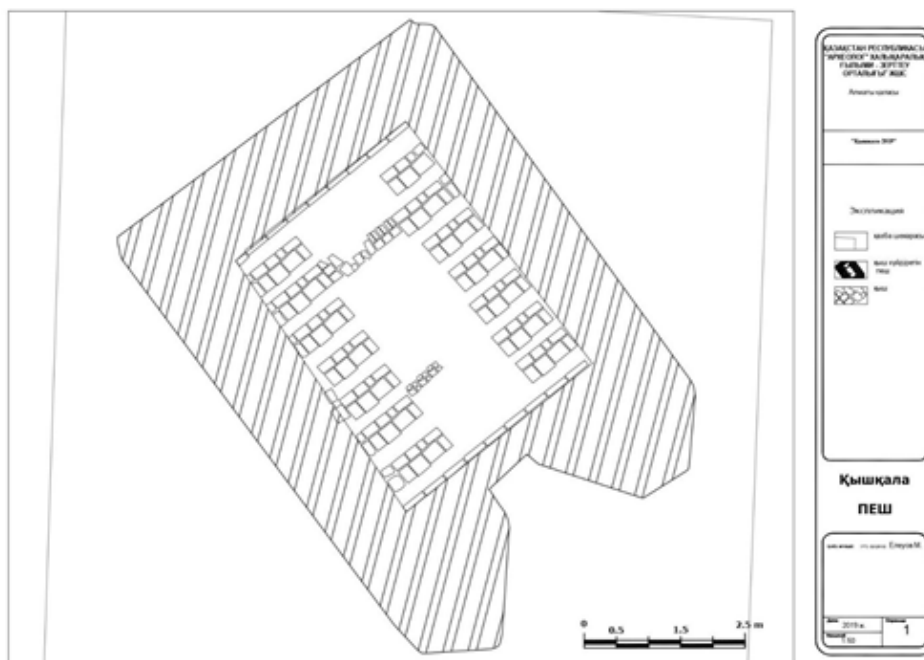


Fig. 3. Drawing of a brick kiln. 2019

Generally, brick-burning furnaces were found in Sarayshyk (Patsevich, 1950: 221-224; Patsevich, 1957: 111-114), Otyrar, Kuiryktobe (Akishev, Baipakov, Erzavovich, 1987: 178-184), Zhaiyk (Baypakov, Smagulov, Akhatov, 2005: 89-91; Kalmenov, 2013: 205-213), Sortobe, medieval Aktobe (Akymbek, 2016: 134-140; Akymbek, 2017: 76-87; Akymbek 2017: 173-183), the medieval city of Kyshkala (Arynov and others, 2021: 255-261). The construction and structure of all these furnaces belonging to the 12th-14th centuries are very similar to each other. Most of their burning chambers dug into the ground or underground structures of the monument. In the construction of furnaces with rectangular or square designs, burnt bricks were used along with raw bricks.

### Discussions

Archeological scientific-research works conducted in the medieval cities and settlements of Kazakhstan showed that clay was molded and dried at high temperature, and bricks were widely used as building materials in any type of construction, religious and public buildings, road paving and other constructions. These clay bricks can be found in all the cities of Kazakhstan that appeared during the early and late Middle Ages. In particular, it can be seen in the cities along the Syr Darya, cities of the Shu-Talas region, monuments belonging to the Golden Horde era of Central Kazakhstan. “However, the beginning of its widespread use in construction and the construction of public and religious building corresponds to the Karakhan era. According to E. Akymbek, the word “brick” itself comes from an ancient Turkic word” (Akymbek, 2017: 76-84). If we pay attention to the old Turkic dictionary, the words “KERPIČ” and “OČAQ”, “OTČUQ” do not deviate from the words used today (Ancient Turkic dictionary, 1969: 362, 373, 376).

There are a lot of brick-burning furnaces in the territory of Kazakhstan. Moreover, there are several opinions about the variants of their names in the Kazakh language. Therefore, conducting a comparative analysis of these opinions, we will focus on the question of how to name a brick-burning furnace “kumdan” or “furnace”.

A.K. Pisarchik mentions that at the beginning of the 19<sup>th</sup> and 20<sup>th</sup> centuries, craftsmen in the Ferghana region named the brick-burning furnace as “humdon” (Pisarchik, 1954: 231).

At the beginning of the 20<sup>th</sup> century, Khorezm artisans called the pottery burning furnace “kumbuz” and the craftsman working with it “khumbuzchi” (Dzhabbarov, 1959: 380). And the potters of the Khiva region called the furnace for burning dishes khumbuz (Ekimova, 1959: 357). There is even a monument, called Khumbuztepe in South Khorezm. Its name proves that the settlement served as a center of the pottery production for a long time (Mambetullaev, 1984: 30). Since the problem we are dealing with is brick burning, we will further discuss the facts related to kumdan.

U. Shalekenov and N. Aldabergenov considered two multi-chamber furnaces and a hearth for burning pottery, which were found in Shahrstan of the medieval city of Aktobe and in Rabad (Shaleknov, 2006: 25). M. Kozha refers to several clay-burning furnaces found in Otyrar “furnace-kumdan”, “kundan” and the lower chamber (room) of the two-storey kumdans “otkhana” (Kozhaev, 1996: 65). Therefore, E. Akymbek defined the etymology of a brick-burning furnace discovered as a result of archaeological research conducted in Sortobe and medieval Aktobe in the Shu region, conducted a historical comparative analysis and

proved that “furnace in the Kazakh language” should be called “kumdan” (Akymbek, 2017: 134-135). In support of this opinion, we considered it appropriate to name the brick-burning place found in the medieval Kyshkala as “kumdan”.

The design and structure of all furnaces dating back to the 13<sup>th</sup>-14<sup>th</sup> centuries found on the territory of Kazakhstan are identical to each other. Most of them have burning chambers dug into the ground or underground structures of the monument. During that period, burnt bricks along with raw bricks were widely used for the construction of rectangular or square furnaces. This style was preserved in the furnaces of the following centuries.

Although the purpose of burning furnaces is to dry the material, they are divided into types depending on the usage. V.V. Ekimova who was in Khiva in 1930, divided Khorezm furnaces (khumbuz) into two types: a) furnaces for burning ditch pipes, winch vase and large tanks and b) furnaces for burning dishes. At the same time, it is mentioned that the lower side of the furnaces, consisted of two parts: the burner and the combustion chamber installed by digging into the ground and there are holes between them (Ekimova, 1959: 357-358). A.K. Pisarchik systematically analyzed the building materials and structural methods of the craftsmen of the early 19<sup>th</sup>-20<sup>th</sup> centuries of the Ferghana region, and pointed out that “brick-burning furnaces (khumdon) consisted of two parts: an underground hearth and an above-ground burning chamber” (Pisarchik, 1954: 231-234).

## Results

In the excavations of 2019, the thickness of outer walls of the medieval furnace in Kyshkala are 1 m, they are made of unfired pieces 44-46x24-26x8 cm in size, the preserved height is 1,8-2 m. The furnace consists of a burner and combustion chambers. The walls of the combustion chamber are steep and the height of the eight arches covering it is 1.2 m. In the arch covering the top of the combustion chamber, there are 7 cavities (channels) for the passage of hot air and it was found that the combustion chamber has 7 arches, the base of which is slanted from the bottom to the top (outside) (Arynov etc., 2021: 255-261). At the same time, a special picture of kumbyz (furnace) for burning brick was drawn (Fig 4).



Fig. 4. Brick furnace (oven) temporary storage and fixing work. 2020



Although ancient and medieval pottery or brick burning furnaces have the same functions, it should be noted that there are a number of similarities and differences in terms of design and structure. It has been determined that all brick burning furnaces consist of two chambers: the burner and the burning part, as well as their combustion chamber are mostly dug into the ground. This served to keep their hot temperature. In addition, the thickness of the walls on both sides of some furnaces is also due to the fact that they keep heat for a long time. From this point of view, it can be seen that the outer brick wall of the Kyshkala furnace's combustion chamber was thickened and reinforced with paksa.

At present time, the word "kumbyz" is found as a dialect in some parts of Kazakhstan. Sandbuz is a house built to burn a piece of sand, make bricks, a brick factory (Dictionary of the Kazakh Literary Language, 2011: 332). Hence, we can notice that the word "kumbyz" has fully preserved its meaning in the Kazakh language. The words "kumdan" and "kumbyz" in our usage are not too far from each other. The root of both of them comes from the word "kum" (sand). However, according to the given information, it can be concluded that "kumbyz" is intended for burning bricks, and "kumdan" is for burning dishes.

Therefore, we agree with the statement of E. Akymbek: "there is every reason to call the hearth in which bricks are burnt "furnace" or "kumbyz", and the hearth in which pottery are burnt "kumdan" (Akymbek, 2017: 135).

In the medieval city of Kyshkala, a temporary storage of opened constructions, in coordination with the specialists of the customer institution, confirmatory work was conducted during the excavations, which were carried out in 2019.

When carrying out these works, it was taken into account that local residents, schoolchildren, local historians, employees of the regional Department of Culture, archaeological experts and members of the Scientific and Methodological Council under the Regional Administration for the Protection and Use of the Historical and Cultural Heritage of the Kyzylorda Region, as well as members of the Field Committee of this Council observed excavation works of the constructions, and in order to preserve the furnace for burning pottery found in the third excavation, it was completely covered with soil.

According to the technical specification of the contract №34 of 2020, the top of the furnace for burning pottery should be covered. In agreement with the employees of this institution (appendix 2), taking into consideration that there is no need to cover it, we decided to cover the outside of the furnace with unfired ricks with the thickness of 1m, with a preserved height of 0.5-0.7m, and weave outside of the furnace with unfired bricks and plaster it (2020: 22). According to this decision, the wall of the furnace which was made of unfired bricks was cleaned and a row of fired bricks 25x25, 24x24, 26x26 cm in size was laid on its edge to protect it from damage. An unburned lump 0.7-0.8 m high was built on top, on the outside it was plastered with straw clay mixed with rice husk and the top was covered with soil 0.2-0.4 m thick (Fig. 4).

## Conclusion

Most of the ancient and medieval furnaces were placed near water sources or reservoirs. This is due to the fact that the potters of that time believed that clay raw materials and water mixed with clay should be close to each other. The considered Kyshkala kumdan (furnace) is also located on the right bank of the flow of the Zhanadarya Channel.

The emergence and development of brick-burning furnaces generally dates back to the 11<sup>th</sup> century. The furnaces, which are considered “brick-burning furnaces”, separated from the general furnaces for burning pottery, also belong to that period. Of course, the name «burnt brick» is probably related to the many fragments found inside it. Not only bricks were fired there, but also large vessels. In addition, many brick burning furnaces were found in the beginning.

It can be noticed that in furnaces dating back to the 11<sup>th</sup>-13<sup>th</sup> centuries, arches were made in the combustion chambers, separated by cavities, and the heat of the fire passed through the holes. It can be seen that during these centuries, the production of brick burning was set in a special way. This is confirmed by the fact that several furnaces consistently came out of the same place.

Drying and burning pottery is a very complex process. The correct output and good quality of the product directly depend on this. Saturating of the clay mixture, its good molding in the form of a brick, application to the surface with long fingers ensure uniform drying without cracking. This applies to work in front of the furnace. But if this process is performed incorrectly, the product will not come out properly during burning in the furnace. Of course, the temperature in the furnace is very important for this process. That is why the correct design and structure of the furnace played a significant role.

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#### **М. Елеуов**

*Әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан Республикасы*

*(Email: madiareleyov@mail.ru)*

#### **\*А.А. Молдахмет**

*Әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан Республикасы*

*(Email: arhadkz@mail.ru)*

*\*Байланыс үшін автор: arhadkz@mail.ru*

### **Ортағасырлық Қышқала қаласынан ашылған құмбыз (пеш)**

**Аннотация.** Ортағасырлық Қышқала қаласына жүргізілген көп жылдық зерттеулер нәтижесінде құрылысында толық қыш кірпіш қолданылған кесене, медресе, қыш кірпіштен қаланған қарапайым жерлеу орындары, қыш кірпіштерден салынған тұрғын үй бөлмелері мен культтік, мемориалдық құрылыс нысандарының қалдықтары анықталды. Осыншама көп кірпішті қайда күйдіріп жасағандығын білу мақсатында да бірқатар зерттеулер жүргізіліп, нәтижесінде 2019 жылы ортағасырлық Қышқала қаласындағы шахристанның шығыс бөлігінен XIII-XIV ғасырларға жататын Алтын Орда дәуіріне тиесілі кірпіш күйдіретін құмбыз (пеш) ашылып, шағын ақпараттар жарияланған болатын. Сондықтан мақалада осы кірпішті күйдіруге арналған құмбыз (пеш) сөзінің этимологиясына (шығу төркініне) байланысты кең көлемді анықтамалар бере отырып,

Қазақстанның ортағасырлық тарихындағы қалалық мәдениеттің гүлденуіне тікелей әсер еткен кірпіш өңдейтін құмбыздардың зерттелу тарихына тоқталамыз. Мұндай құмбыздар Шу өңірінен және ортағасырлық Ақтөбе қаласынан, ортағасырлық Сарайшық және Жайық қалаларынан, сонымен қатар, Сырдың орта және төменгі ағысындағы ортағасырлық қалалардан ашылды. Мақалада құмбыздардың ашылу тарихы мен онда жүргізілген археологиялық зерттеулерге тоқтала келіп, оларға салыстырмалы хронологиялық талдаулар жүргізіле отырып, алғашқы жарияланған нәтижелер қосымша материалдармен толықтырылды. Сондай-ақ, кірпіш күйдіретін немесе өңдейтін құмбыздардың (пештердің) түріне, жасалу технологиясына байланысты мәселелер қарастырылып, оларда уақытша сақтау, қорғау шараларын жүзеге асыру арқылы тарихи-мәдени құндылықтарды қайта қалпына келтіру барысында атқарылған жұмыстар баяндалады.

**Кілт сөздер:** Алтын Орда, Қышқала, қала, қазба, орта ғасыр, кірпіш күйдіретін құмбыз (пеш), оттық камерасы, күйдіру камерасы, арка.

**М. Елеуов**

*Казахский национальный университет им. аль-Фараби, Алматы, Республика Казахстан  
(Email: madiareleyov@mail.ru)*

**\*А.А. Молдахмет**

*Казахский национальный университет им. аль-Фараби, Алматы, Республика Казахстан  
(Email: arhadkz@mail.ru)*

*\*Автор для корреспонденции: arhadkz@mail.ru*

### **Кумбыз (печь), открытый в средневековом городе Кышкала**

**Аннотация.** Многолетние исследования средневекового города Кышкала выявили мавзолей, в строительстве которого использовался полный керамический кирпич, медресе, простые захоронения из керамического кирпича, жилые помещения, построенные из керамического кирпича и остатки культовых, мемориальных строительных объектов. Также был проведен ряд исследований, чтобы выяснить, где было сожжено так много кирпичей, в результате чего в 2019 году в восточной части Шахристана в средневековом городе Кышкала был открыт песок (печь) для обжига кирпича, относящийся к эпохе Золотой Орды, относящейся к XIII-XIV векам. Поэтому в статье, давая обширные определения, связанные с этимологией слова «песчаник» (печь) для обжига этого кирпича, мы рассмотрели историю изучения кирпичных печей средневековой истории Казахстана, которые оказали непосредственное влияние на процветание городской культуры. Такие кумбузы были открыты в Чуйском регионе и средневековом городе Актобе, средневековых городах Сарайшык и Урал, а также средневековых городах среднего и нижнего течения Сыр-Дарьи. В статье, касаясь истории открытия кумбызов и проведенных там археологических исследований, авторы привели дополнительные материалы, в которых были впервые обнародованы результаты с проведением сравнительного хронологического анализа их. Также рассматриваются вопросы, связанные с типом, технологией изготовления кумбызов (печей), обжигающих или перерабатывающих кирпич, излагается работа, проделанная в ходе реконструкции историко-культурной ценности путем осуществления выполненных в них временных охранных мероприятий.

**Ключевые слова:** Золотая Орда, керамика, город, раскопки, средневековье, пески для обжига кирпича (печь), горелка, обжигочная камера, арка.

***Information about authors:***

*Madiyar Yeleuov*, Doctor of Historical Sciences, Professor, Department of Archeology, Ethnology, and Museology, Al-Farabi Kazakh National University, 71 Al-Farabi ave., Almaty, Republic of Kazakhstan.  
<https://orcid.org/0000-0002-6459-8019>

*Arkhad Aitzhanuly Moldakhmet*, PhD student of the Department of Archeology, Ethnology and Museology, Al-Farabi Kazakh National University, 71 Al-Farabi ave., Almaty, Republic of Kazakhstan.  
<https://orcid.org/0000-0002-9817-6412>

***Авторлар туралы мәлімет:***

*Елеуов Мадияр*, тарих ғылымдарының докторы, профессор, археология, этнология және музеология кафедрасы, Әл-Фараби атындағы Қазақ ұлттық университеті, Әл-Фараби даңғ., 71, Алматы, Қазақстан Республикасы.  
<https://orcid.org/0000-0002-6459-8019>

*Молдахмет Архад Айтжанұлы*, 3-курс докторанты, археология, этнология және музеология кафедрасы, Әл-Фараби атындағы Қазақ ұлттық университеті, Әл-Фараби даңғ., 71, Алматы, Қазақстан Республикасы.  
<https://orcid.org/0000-0002-9817-6412>

***Сведения об авторах:***

*Елеуов Мадияр*, доктор исторических наук, профессор, кафедра археологии, этнологии и музеологии, Казахский национальный университет им. аль-Фараби, проспект аль-Фараби, 71, Алматы, Республика Казахстан.  
<https://orcid.org/0000-0002-6459-8019>

*Молдахмет Архад Айтжанұлы*, докторант 3-курса, кафедра археологии, этнологии и музеологии, Казахский национальный университет им. аль-Фараби, проспект аль-Фараби, 71, Алматы, Республика Казахстан.  
<https://orcid.org/0000-0002-9817-6412>