
Vegetable and fruits on a Turkish table in 16th-17th century Buda. An interdisciplinary study of a post-medieval pit

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Abstract

Az Oszmán Birodalom terjeszkedése a XVI. század során elérte Magyarországot. A hódítás nem csak katonai értelemben történt meg, hanem kulturális szempontból is. Az asztali kultúra és az étkezés is mélyreható változást mutatott a török és délszláv hatás nyomán. Új edényformák, új zöldségek és gyümölcsök, új ízek jelennek meg a betörő új ételekkel. Ezek ötvöződnek a magyar középkori hagyománnyal, hogy ennek nyomán kialakuljon az újkori magyar étkezéskultúra. Ennek demonstrálására interdiszciplináris (régészeti, archeobotanikai és -zoológiai) vizsgálódás alá vettük egy budapesti ásatás török gödrét. Görögdinnye, sárgadinnye, szamóca, fekete eper, bodza, szőlő Magyarországon a török korban általánosan elterjedt növények lehettek. Néhány növény fogyasztása jellemzőbb a török vagy balkáni ízlésre, mint a magyarra: füge, gránátalma. A szőlőmagvakon belül jelentős volt a csemegeaszólya aránya és mellettük bogyómaradványok is volt.

Introduction

Turkish occupation in Hungary began with the decisive battle of Mohács in the south in 1526, and lasted until the Karlóca Peace Treaty concluded in 1699. The former royal capital of Buda, central to this paper, was first occupied in 1529, regained and lost by Christian forces several times, and finally liberated in 1686. These tumultuous 170 years of Hungarian history were not only violent; they have also seen amply documented population movements, which caused different ethnic and religious interactions. These changes took place over several generations. They were evidenced by a complex and varied material culture.

This paper is dealing with the multidisciplinary analysis of a Turkish pit from post-medieval Buda, using archaeological, archaeobotanical and archaeozoological remains and referring also to written sources.

to determine the composition of the botanical and zoological material and to compare it with the pottery assemblage.

This case study is using a multidisciplinary approach to the interpretation of early modern material culture by analysing archaeozoological and archaeobotanical remains. A qualitative comparison of the results is done, regarding the Islamic influence in post-medieval Hungary. This approach did not only involve separate quantifications for each data set, but also relevant aspects of archaeological artifacts. Finally, the historical records are also compared in qualitative terms.

The resulting picture we may consider impressionistic, but it is an appropriate approach to test previously unchallenged hypotheses on urban micro-environments and ethnic/religious aspects of diet during the Ottoman period in Hungary.

Aims of archaeobotanical research

The Ganz Street site was discovered during systematic salvage excavations in the 2nd district of Budapest (12-14 Ganz Street) in 2003. The excavations were directed by András Véghe and Katalin H. Kérdő on behalf of the Budapest History Museum. During the middle Ages this area, named after St. Peter the Martyr, belonged to the northern section of the Viziváros (Wasserstadt) suburb located between the Danube River and Castle Hill in the royal capital of Buda. A pit found during the excavation contained high quality Turkish pottery. Additionally, we found abundant botanical and zoological remains in this pit. The aim of our study was

Material and methods

The structure chosen for detailed analysis, the Ottoman-period pit, was unearthed at the grids C2 and C3 of the site, at an altitude of 102.31 m above the Adriatic sea. The pit was surrounding a smaller pit that was stratigraphically younger. During the removal of the top layer a loose oval filling, surrounded by traces of non-charred wood, was observed in the centre of the pit. As if they had been buried in a barrel, eleven ceramic beakers were recovered from the filling at an elevation of 101.35 m. The loose filling of the Ottoman-period pit was homogeneous dark gray silt, rich in charcoal fragments. The pottery found in the pit consisted mostly of cooking vessels and tableware, used for serving food and

Latin name	English name	Number of seeds
<i>Amaranthus lividus</i> L.	livid amaranth	3
<i>Anethum graveolens</i> L.	dill	1
<i>Brassica</i> cf. <i>oleracea</i> L.	cabbage	1
Brassicaceae	mustard family	3
<i>Carex hirta</i> L.	hairy sedge	3
<i>Carex pallescens</i> L.	pale sedge	5
<i>Carex silvatica</i> Huds.	wood sedge	1
<i>Chenopodium album</i> L.	fat-hen	6
<i>Chenopodium</i> cf. <i>murale</i> L.	nettle-leaved goosefoot	1
<i>Chenopodium hybridum</i> L.	maple-leaved goosefoot	4
<i>Citrullus lanatus</i> (Thundg.) Mansf.	watermelon	1
<i>Cucumis melo</i> L.	cantaloupe	2
Fabaceae		1
<i>Ficus carica</i> L.	fig	58
<i>Fragaria vesca</i> L.	strawberry	12
<i>Fumaria officinalis</i> L.	common fumitory	1
<i>Galium aparine</i> L.	goosegrass	1
<i>Glaucium corniculatum</i> L.	common horned-poppy	3
<i>Heliotropium europaeum</i> L.	european heliotrop	1
<i>Hyoscyamus niger</i> L.	black henbane	2
<i>Linum usitatissimum</i> L.	flax	1
<i>Malus</i> sp.	apple	3
<i>Malva silvestris</i> L.	common mallow	2
<i>Melilotus album</i> L.	white sweet clover	1
<i>Morus nigra</i> L.	mulberry tree	26
<i>Panicum miliaceum</i> L.	millet	4
<i>Papaver somniferum</i> L.	poppy seed	2
<i>Punica granatum</i> L.	pomegranate	1
<i>Reseda lutea</i> L.	wilde mignonette	1
<i>Rubus caesius</i> L.	dewberry	1
<i>Rubus fruticosus</i> agg.	bramble	4
<i>Rubus idaeus</i> L.	raspberry	1
<i>Sambucus ebulus</i> L.	dwarf elderberry	2
<i>Sambucus nigra</i> L.	black elderberry	5
<i>Schoenoplectus lacustris</i> (L.) Pall.	lakeshore bulrush	9
<i>Setaria lutescens</i> (Weigel) Hubbard	yellow foxtail grass	1
<i>Solanum dulcamara</i> L.	bitter nightshade	2
<i>Solanum nigrum</i> L.	black nightshade	2
<i>Stachys annua</i> L.	annual hedgenettle	2
<i>Trifolium arvense</i> L.	haresfoot clover	1
<i>Triticum aestivum</i> subsp. <i>vulgare</i>	wheat	1
<i>Vicia</i> sp.	vetch	1
<i>Vitis vinifera</i> L. subsp. <i>vinifera</i>	grape	70

Table 1. - Bp.II. Ganz str.12-14. Archaeobotanical remains of a Turkish pit (16th-17th century).

beverages. The structure also contained organic materials visible by the naked eye, comprising palaeoethnobotanical macrofossils and archaeozoological remains in the form of large bones. Fifteen soil samples were taken and processed using water sieving. Unfortunately we cannot conclude on a possible primary function of the pit but later it was obviously used for dumping waste. The total depth of the deposits was 2.14 m. The diameter of 1.5 m of the pit and its conical shape allowed to calculate a volume of approximately 3 m³. 15 soil samples, each containing ca. 5 liters of the fill, were taken from the part of the pit which was located in grid C3. There total volume corresponds to approximately 2.5-3% of the pit's entire volume. Hand-collected animal bones were analyzed from the entire pit (grids C2 and C3). The soil samples were treated by water sieving, using laboratory sieves with mesh sizes of 4.0, 2.0, 1.0, and 0.5 mm. The sieving residues were sorted and identified under a stereo-microscope, using ma-

gnifications of 10 x to 30x. Depending on the state of preservation, seeds and other botanical macro-remains could be identified to differing taxonomic levels by using a reference collection and identification manuals (Németh 1966; Schermann 1966). The 15 soil samples yielded in total 40 plant taxa (Table 1).

Paleoethnobotanical analyses often have only carbonized plant remains at their disposal, which biases the evidence of vegetal food that was eaten raw and also of diaspores, which are fragile and easily destroyed by combustion. Although some carbonized fruit remains were found at the site, the majority of archaeobotanical remains were preserved waterlogged. The waterlogged preservation of the deposits is resulting from the characteristically high water-table at the vicinity of the Danube. Since the majority of identified plant taxa are not cultivated plant species, the remains recovered from this pit can be used for a tentative reconstruction of the site's environment. Ecological criteria can be used to group the archaeobotanical taxa by habitat types.

One of the most important questions is to what extent the settlement's immediate environment can be reconstructed from the identified plant remains? The answer to this important question can be approached by understanding the habitat requirements of the recorded taxa and by considering, which of them had probably been associated in plant communities during the time period in question. The main problem of this approach is that it is unlikely that the

entire vegetation of the site and its surrounding is represented in the archaeobotanical assemblage. Human selection, taphonomic loss and the bias of sampling have to be considered.

Results

More than 30 different species were recorded in the post-medieval pit, representing different vegetation types. The filling of the pit can be considered as secondary waste deposit, assembling plant remains from various habitats and transported by different human activities. It is difficult to conclude precisely which remains were deposited from plant communities of the direct vicinity of the site and which were brought intentionally or accidentally by human activities from more distant places.

Nevertheless, the vegetation of the vicinity of the excavated pit seems to have been variable. The flora of reedbeds is indicated by the presence of lakeshore bulrush (*Schoenoplectus lacustris*). This plant was also used for various puposes by Man, so it can also be transported over larger distances to the site. Hairy sedge (*Carex hirta*) prefers shady forest habitats and wet extensively used meadows. Scattered humid forest environments and reed vegetation are represented by bitter nightshade (*Solanum dulcamara*) and some gathered fruits such as raspberry (*Rubus idaeus*), bramble (*Rubus fruticosus*) and dewberry (*Rubus caesius*). Seeds from black and dwarf elderberry (*Sambucus nigra* and *Sambucus ebulus*) as well as from wild strawberry (*Fragaria vesca*) are usually characterizing forest clearances and forest edges, but may have also been part of the open vegetation in this urban environment. Strawberry, as well as bramble, dewberry, and raspberry may not represent loval vegetation of the site and its surroundings; they could have been collected as wild food plants.

Hairy sedge and pale sedge (*Carex pallescens*) are meadow plants. Most frequent, however, were ruderal plants, species that commonly indicate habitats strongly influenced by human activities, for example roadsides, ditches, fallow fields, and the immediate vicinities of buildings. Resulting from the decay of organic waste, these areas are usually characterized by nitrogen-rich soils. Typical members of the ruderal plant associations found in these places comprise fat-hen (*Chenopodium album*), nettle-leaved goosefoot (*Chenopodium cf. murale*), common fumitory (*Fumaria officinalis*), black henbane (*Hyoscyamus niger*) and wild mignonette (*Reseda lutea*). These are all indicative of places with a strong anthropogenic influence and their occurrence in the assemblage is not surprising considering the historical topography of this suburb. These weeds are indicative of a humid and neglected urban landscape which was characterized by a heavy anthropogenic influence, resulting in soils rich in phosphates and nitrogene.

Some of the recorded weeds are ruderals, but can also been associated with cereal cultivation. These include livid amaranth (*Amaranthus lividus*), maple-leaved goosefoot (*Chenopodium hybridum*), yellow foxtail grass (*Setaria lutescens*), and black nightshade (*Solanum nigrum*). Others, especially goosegrass (*Galium aparine*), common horned-poppy (*Glaucium corniculatum*), common mallow (*Malva silvestris*) and annual hedgenettle (*Stachys annua*) tend to be associated with winter cereal cultivation. During his 1660-1664 trips, the Turkish traveler Evliya Çelebi (1985) mentioned the extension of wheat (*Triticum aestivum*) and barley (*Hordeum vulgare*) fields in the Pest Plain of the Danube. This observation, however, is more relevant

to a typical rural setting and less important for the more urban setting of the Ganz Street site. The densely inhabited environment at which the pit was located evidently represents a place of consumption rather than production. The cereal cultivation in the Pest plain was important for supplying vegetal food to the inhabitants of Buda.

It is evident that in the filling of the pit fruits, both wild and domesticated, are best represented. It is impossible to tell whether the wild fruits were gathered locally or purchased at the market. A century earlier, the fifteenth-century law book of Buda regulated the location of stands in the medieval market place (Blazovich 2001). It is also listing products, including strawberries, bramble and elderberry – all recovered at the Ganz Street site – cornel (*Cornus mas*) and blackthorn (*Prunus spinosa*). All these wild fruits, that could have been collected individually, were also marketable items at the markets of the town. In Hungary, strawberries were not intensively cultivated until the eighteenth century. Until then, the yields of wild strawberries were actually higher than those of the early domestic variety (Surányi 1985: 119).

The fifteenth-century Buda law book offers a rich list of more than a dozen fruits and vegetables, which were sold at the market (Blazovich 2001). From these fruits and vegetables, however, only apple (*Malus* sp.), strawberry, watermelon (*Citrullus lanatus*), grape (*Vitis vinifera* ssp. *vinifera*), poppy seed (*Papaver somniferum*) and cabbage (*Brassica* cf. *oleracea*) were identified in the pit. It is unlikely that the medieval choice of diverse fruits and vegetables would have declined so quickly within a century, even if this household consumed a selected set of fruits and vegetables. If the pit was filled within a relatively short time, seasonality may have also limited the availability and choice of food plants. Sampling bias must also be considered as only a relatively small amount of the pit's fill was chosen for this study.

Concerning the range of domestic fruits, both watermelon (*Citrullus lanatus*) and cantaloupe (*Cucumis melo*) were cultivated in Hungary during the Middle Ages. However, they were also highly appreciated in Turkish horticulture, and Turkish occupation made these fruits increasingly popular among Hungarians. In addition to medieval watermelons with yellow endocarpe, the red variety became more wide-spread after the Ottoman period (Gyulai 2001: 184-185). Figs (*Ficus carica*) were popular among the Turkish population in Hungary as well; it is possible that they even planted their own fig trees. According to Gyulai (2001), however, the fig seeds recovered from pre-Turkish, medieval sites in Buda seem to be of local origin. Figs from the Mediterranean had been introduced to Hungary prior to Ottoman Turkish occupation. They

became popular across Europe during the fifteenth century. During Renaissance times in Hungary the intensification of trading relations with Italy may have led to the importation of the first fig trees. Some researchers think that these plants, which sometimes survived for centuries on the sunny slopes of Gellért hill in Budapest, are the descendants of those early imports (Gyulai 2001: 189). Although fig survives in warmer and sheltered places, its fruits usually do not ripen well in the Hungarian climate. This must have been especially true at the end of the sixteenth century, when the Hypsithermal led to global cooling and increased precipitation (Rácz 1993). Turkish tax records bear witness to the importation of figs from areas south of Hungary, the regions which constituted Yugoslavia during the twentieth century (Fekete and Nagy 1974: 373). The spreading of the fig in Hungary did not expose yet. The clarification of these aspects demands additional historical and archaeobotanical studies. While pomegranate (*Punica granatum*) has been recovered from medieval household deposits in Buda, the seeds are not a regular component of archaeological assemblages until the time after the Ottoman occupation. Mulberry trees (*Morus nigra*) were autochthonous in Hungary. They have also been consciously cultivated since the fifteenth century. The small seeds of this widely consumed fruit frequently occur in many late medieval archaeobotanical assemblages (e.g., Gyulai 1995: 159).

The assemblage of botanical macro-remains from our pit was dominated by the seeds and remains of grape. The majority of remains, however, must have been marc, a by-product of preparing beverages, most probably unfermented grape juice or wine.

Documents from Ottoman-period Buda may verify the importance of paleoethnobotanical research. Unfortunately, written sources are of little help assessing the seasonal character of archaeological deposits.

Among the fruits, grape is of special importance as indicator of viticulture and wine consumption. Although the Moslem prohibition of consuming alcohol is well known, several Turks living in Hungary acquired the nickname epitheton “ornans” (“the drunkard”), indicating that they did not strictly follow this aspect of religion. In medieval Turkey alcohol prohibition also varied from time to time. Some rulers insisted on respecting the word of the Qur’an in this regard, while others had a more relaxed attitude to drinking (Mazahéri 1989: 104).

In addition to wine, non-alcoholic pekmez, also known as “must-honey,” a Turkish syrup-like substance, was used. This liquid is prepared by condensing juices of grape – or figs or mulberries – by boiling the fruit juice with natural coagulants. Most of the grape products in modern Turkey are in the form of pekmez or the grapes are dried and used as raisins. Among others, pekmez is mentioned by Kelemen Mikes, a Hungarian exile in

Tekirdag (Western Turkey) as poured on snow, producing a sherbet-like chilled fruit juice (Mikes 1862: 55). Thus, the recorded grape remains may be related to at least three different products. Members of an observing Moslem household would have been more likely to have consumed pekmez than wine (Andrásfalvy 1961: 87-95).

In comparison with the considerable range of fruits represented in our pit, the underrepresentation of cereals in our assemblage has to be mentioned. According to the historical record mainly wheat (*Triticum* spp.), but even quantities of rice (*Oryza* spp.) were shipped to Buda; the latter arriving from the territories of modern-day Serbia and Bulgaria under Ottoman Rule. It is therefore remarkable that cereals are almost absent from the analyzed samples. With exception of chaff from rice and millets, cereal caryopses are generally not well preserved under waterlogged conditions. Another possibility, shown by the sporadic presence of wheat and millet (*Panicum miliaceum*) in the samples, is that the cereals were consumed processed.

The same may apply for oil plants, poppy and flax (*Linum* spp.). The latter may have been mostly used in manufacturing linen, a craft activity not identifiable within close proximity of the pit, which is giving evidence of consumption but not of production. The low representation of garden vegetables, for example of cabbage, is somewhat more difficult to explain.

Another interpretive aspect of the discussion of the recorded plant remains is the question of seasonality. Looking at the seasonal availability of the seeds, ranging from strawberries to grape, an early summer-early autumn deposition is most likely. This broad time range raises the question of the possibility of a single filling activity, originally hypothesized on the basis of closely related tableware among the ceramics. Some fruits ripen with a difference of several months, although some imported or preserved fruit products may hamper the interpretation in aspects of seasonality. While the material originates from a large single pit, we have to consider the issue of sampling bias when the representative value of the assemblage is appraised. Partial recovery, however, would not explain the relatively broad seasonal spectrum of the recorded plant species.

Another phenomenon may be explained by the sampling method. It may be considered astonishing that the usually widely represented fruitstones from cultivated taxa of the Rosaceae family (i.e. plums [*Prunus domestica*], cherries [*Prunus* spp.], peaches [*Prunus persica*], and apricots [*Prunus armeniaca*]) as well as shells of hazelnuts (*Corylus* spp.) or walnuts (*Juglans* spp.) are completely absent. These plant macrofossils are clearly visible, resistant remains, which tend to be retrieved at first, even in hand-collected



1. - Turkish table 16th-17th century.

samples. Nuts could also be stored and consumed throughout the year. Nevertheless, aside from the possibility that they were simply not eaten at the site, they may have occurred in numbers far smaller than the abundant seeds of grape, berries, or melon. Therefore the statistical probability of encountering them in a relatively small sample is considerably smaller, since – as has been shown for different classes of animals – rare species are more likely to be recorded when sample size increases.

Summary

The Ottoman Empire expanded into Hungary in the 16th century. The character of the conquest was not only military but cultural as well. Table culture and dining customs have experienced radical changes reflecting these new Ottoman and South-Slavic influences. The interdisciplinary analysis of a Turkish pit from an excavation near Buda castle in Budapest gives evidence of these changes (fig. 1). New vessel types are reflecting different cooking traditions; new vegetables and fruits, new tastes and changing demands of the food market appeared with the new dishes.

These ‘foreign’ impulses mixed with local Hungarian medieval food traditions triggered a process that led to a

culinary tradition we consider today as modern Hungarian dining-culture.

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