

New archaeobotanical evidence about *Olea europaea subsp. europaea* from the territory of Bulgaria

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ABSTRACT

This paper presents new data on the appearance of the olive in the territory of Bulgaria, based on archaeobotanical studies. To date, evidence for the presence of olive findings is still limited and unpublished.

This paper will focus on results of olive remains found in 9 archaeological sites in the territory of Bulgaria. The results from the archaeobotanical analysis show that these findings belong to the cultivated form *Olea europaea subsp. europaea*. The earliest remains from the territory of Bulgaria date back between the 5th and 3rd century BCE. During this period olives were not only consumed, but were also transformed into olive oil and other derivative products and this was traded. So far, the presence of olives in the territory of Bulgaria has been very poorly recorded. The material resulting from the ritual hearths in the cemetery at Sozopol (Apollonia Pontica) provides important information about some of the practices of funerary rites associated with the use of plants. In the light of this paucity, the archaeobotanical evidence from these 9 archaeological sites is of particular interest. It is obvious that in the 3rd century BCE olives were imported together with other species such as stone pine nuts, figs, etc. Its presence shows contacts with the Mediterranean region. The information obtained sheds light on the significance of *Olea europaea subsp. europaea*, not only as a nutritional resource, but also as an important component in ritual practices.

Keywords: olive, archaeobotanical evidence, ritual practices, Bulgaria

INTRODUCTION

Olive cultivation and olive oil production were inseparably linked to the Mediterranean region and its cuisine. The olive tree is one of the oldest species that produced fruit in the Old World together with grape vine, fig and date palm (Zohary, Spiegel-Roy 1975). According to Franke and Hammer (1979), the deliberate cultivation of fruit trees began in the Middle East by 4000 BCE. The main species from the initial wave of fruit domestication were olive, grape, fig and date. During the Bronze Age, olives, grapes and figs, together with cereals and pulses emerged as the main triad of products in the Mediterranean, including the Aegean (Zohary, Hopf 2000). Y. Melamed, M. Kislev and E. Weiss report some of the earliest finds of date olive stones date back to ca. 780 000 years BP from Acheulian Gesher Benot Ya'akov, Hula Valley (Melamed et al. 2013) and ca. 23,000 BP Epipalaeolithic Ohalo II, Sea of Galilee, Israel (Kislev et al. 2002; Weiss 2009). The finds belong to the Neolithic and Chalcolithic have been found in sites on the territory of the Levant. D. Zohary, P. Spiegel-Roy and R. Neef found that the earliest appearance of olive horticulture outside the natural area of distribution is from the Late

Chalcolithic Tuleilat Ghassul (ca. 6800 – 5800 cal. BP), north of the Dead Sea, Jordan (Zohary, Spiegel-Roy 1975; Neef 1990).

Data for the production of olive oil in some settlements from Chalcolithic sites are also reported in the publications of Gophna & Kislev (1979); Weiss (2015), Tell Saf (Gophna & Kislev 1979), Tell Shuna North, and Tell Abu Hamid (Neef 1990). E. Weiss (Weiss 2015), provides detailed information on the distribution of olive finds, as well as the latest genetic research on the origin of olives, citing Besnard et al. (2013). According to them, the current olives originate from three main Quaternary lines: the Middle East (including Cyprus), the Aegean and the Strait of Gibraltar. The initial domestication was in the northern Levant, followed by a spread across the Mediterranean basin to its western parts. The genetic stock of the domesticated olive became enriched along the way by repeated hybridization with local wild *oleaster* populations. The evidence from living plants therefore shows that the domesticated olive originated from the Mediterranean *oleaster* wild forms (Besnard et al. 2013 cited in Weiss 2015).

Recent studies based on morphometric parameters of olive endocarps are related to the studies in Teral's research (Teral, Alonso, Buxo et al. 2014). Based on morphometric studies, it has been shown that morphological changes in the endocarps of olives during domestication, both geographically and chronologically, offer new criteria for identifying olive varieties. Comparative analyses show that cultivated and wild forms can be distinguished from cultivated forms by shape analysis, but not by size. Comparative data has been obtained from archeological samples, modern varieties, as well as from both early and autochthonous domestication of olives in the northwestern Mediterranean area. This has proved that the cultivated forms appeared in the regions during the Chalcolithic/Bronze Age and this is confirmed by agricultural and selective practices from that time (Teral, Alonso, Buxo et al. 2014).

Based on pollen data Langgut, Chedadi, Carrión et al. (2019) proves that the earliest olive cultivation originated in the southern Levant – about 6500 BCE. In the early and mid-6000 BP. olive was cultivated in the Aegean. According to them, from these two areas olives migrate and spread in the Mediterranean and about 3200 BP. It was cultivated in Anatolia, Italy – 3400 BCE. and on the Iberian Peninsula in the middle / end of the 3rd millennium (Langgut, Chedadi, Carrión et al. 2019).

Olive remains have been discovered in numerous sites in the Mediterranean basin. The earliest archaeobotanical evidence of olive, probably wild, was discovered in Israel and is dated to 8150 to 7850 cal. BCE (Kislev, Nadel, Carmi 1992; Kislev, Harlan 2012). According to Runnels and Hansen the domestication of the olive tree in Greece can be dated back to 2000 BCE (Runnels, Hansen 1986). However, they are not certain about the extensive production of olive oil during this period. Y. Hamilakis considers that there is no substantial evidence to support the hypothesis of systemic cultivation prior to the Minoan period (Hamilakis 1996). There is also a lack of archaeobotanical evidence. This is related to the problems in distinguishing the form and size of wild and cultivated species. E. Margaritis reports a detailed report by Y. Hamilakis on all archaeobotanical olive remains from southern Greece, and in particular from Crete (Margaritis 2005; Hamilakis 1996). Other authors (Valamoti et al. 2018; Margaritis, Jones 2008) provide detailed information on a number of sites on the territory of Greece.

In contrast to Greece and other Mediterranean countries, data on olives stones in the territory of Bulgaria are extremely scarce. This may be explained by the specific geographical conditions which mean that the olive does not grow in the territory of Bulgaria. One of the ways for olives to reach Bulgarian territory was through trade relations with other neighbor-



Fig. 1. Map of Bulgaria showing the location of the archeological sites with olive stones: 1 – Kalfata, 2 – Messarite, 3 – Lidl Supermarket site, Sozopol, 4 – Water cycle, Sozopol, 5 – Markeli fortress, 6 – Yatrus fortress, 7 – Kabyle, 8 – Orlovo, 9 – Kapitan Andreevo

ing countries and in this aspect the work is important and provides the earliest data on olives in the region.

GEOGRAPHICAL AND ARCHAEOLOGICAL SETTING

The archaeobotanical finds of olives cover different regions of the territory of Bulgaria (Fig. 1). The olive findings have been found in 9 archeological sites on the territory of the country. Four of them cover the area around the town of Sozopol: Apollonia-Kalfata cemetery, Messarite – 4, Water cycle and Lidl Supermarket. The other five are found in Markeli, Yatrus, Kabyle, Kapitan Andreevo and Orlovo.

The olive remains found at the *tumulus* in Kabyle – *tumulus* No 3 are from ritual funeral. The remains from Kapitan Andreevo site and Orlovo were found in ritual pits. The finds from the fortresses of Markeli and Yatrus do not have reliable contexts.

All archaeobotanical samples from the area of Sozopol come from ritual hearths. The chronological scope of the studied sites from the region of Sozopol generally covers the period of functioning of the cemetery – from the middle of the 5th to the middle of the 3rd century BCE.

Some of them are concentrated on the territory of the ancient cemetery of Apollonia Pontica – one of the most important Greek colonies on the Western Black Sea coast. It is one of the greatest and oldest, but also among the best studied sites, located along the Pontic coast.

Apollonia Pontica occupies a narrow rocky peninsula a little less than 1 km long with a maximum width of 200 m. The peninsula now goes by its Greek name, Skamni. There are three offshore islands, Sveti Kirik, which is the nearest; Sveti Ivan and Sveti Petar, which is further north (Baralis et al. 2016).

The earliest population data about the appearance of inhabitants in the area of Sozopol (Apollonia Pontica) are for about 4000 BCE. A prehistoric settlement already existed at the end of the 5th millennium BCE. The archaeological excavation in the hills around Sozopol shows that in the middle of the 2nd millennium BCE the territory of the contemporary town was inhabited by people with a typical Thracian culture, in this case known as Skirnyanin.

Ancient authors wrote that in the 11th century BCE a group of settlers, originating from the Asia Minor polis of Miletus and from the city of Phokaea, founded on the land of the Sozopol peninsula, a new polis called by them Apollonia. It was named after the God Apollo who was worshiped there as curer. By the 5th century BCE the territory of Apollonia Pontica expanded from the cape of Atiya alongside Meden Rid hills as far as the cape named Maslen Noss and alongside the Bourgas sea coast as far as the present-day town of Pomorie, where a new settlement, called Anhialo, was founded (Димитров 2004).

Some of the archaeological materials considered in this work come from the cemetery located outside the town, to the south of Sozopol. According to K. Panayotova the excavation leader, the cemetery can be dated between the 4th and the 2nd century BCE and functioned for about 300 – 350 years (Панайотова 2003).

The analysed archaeobotanical materials were collected during the excavation of several archaeological sites located in the area of Sozopol.

Kalfata

It is an ancient cemetery located a short distance away from the Black Sea coast, not far from the modern town of Sozopol. The cemetery existed for about 300 – 350 years and can be dated to the between the 4th and the 2nd century BCE. In most cases, cremation was performed. Grave goods included ceramic bowls, *lekythoi*, jugs, mirrors, earrings, etc. Animal bones and plant remains were often found in the pits (Hermany 2010).

Messarite 4 – a rural complex of Apollonia Pontica's *chora*

The site is located on a terraced area, on the upper slope, on the western face of the mountain range (base level, alt. 67.03 m) that overlooks the Sveta Marina waterway. During the five campaigns, carried out in the period between 2011 and 2015, the presence of an impressive rural complex was revealed (Baralis et al. 2016). The northern building was founded in the second quarter of the 5th century BCE. This building is the oldest rural towered edifice known to this day in the Black Sea area, where this architectural style became predominant during the 3rd century BCE. Pottery finds include several amphorae fragments from the first half of the 5th century (Lesbos, Chios, proto-Thasian series of Zeest type) (Baralis et al. 2016). The inventory of the newly discovered burials in Messarite 4 consists of unguentaria (five), a net-pattern lekythos, an iron strigil, a knife, a finger ring and bronze coins of Apollonia Pontica (Панайотова и др. 2017).

Lidl Supermarket site, Sozopol

The site is located at the intersection of the ring road of Sozopol, north of the modern cemetery of the town, about 350 m from the actual Black Sea coast. During the rescue excava-

tions, carried out due to the construction of a Lidl store, a Roman burial site was discovered (3rd century BCE). The tomb was used during the early Hellenistic and the early Roman periods (Богданова и др.).

Kapitan Andreevo pit sanctuary

The site is located in the Upper Thracian Plain, located on one of the terraces of the Maritza River (Fig. 1). Structures belonging to a pit sanctuary were identified. The site of Kapitan Andreevo covers several chronological periods including Early Bronze Age, Early Iron Age, Hellenistic period and Early Middle Ages. A total of 130 pits was recorded. These structures are relatively small, predominantly in the shape of a truncated cone. Typical ceramic forms include jars, cups, pots and small storage vessels. 4th to 5th century pottery shows early wheel-turned forms (Попов и др. 2017).

The Yatrus fortress

The Yatrus fortress is located in the lower part of the Yantra River, near the village of Krivina (Fig. 1). The fortress was built in the 4th century BCE and became an important Roman military centre on the Lower Danube limes. During the 7th century, the Avars destroyed the fortress. Later (8th century CE) a Bulgarian settlement with a defensive stone wall and towers emerged. As a result of the archaeological excavations, the eastern gate, several public buildings and two Christian basilica were discovered, as well as several building levels from Late Antiquity, for example B/2 (between the second half of the 4th century and the first half of the 5th century). At the end of this period, all buildings on the territory of the fort were completely destroyed and by 600 CE, the castle was also finally destroyed (www.museumruse.com/ruseznanie/yatrus.html).

Markeli fortress

Markeli fortress is located at the western end of the Hissar Hills, about 8 km from the town of Karnobat (Fig. 1). The fortress was built in Late Antiquity when it was surrounded by a fortress wall. Later in the Middle Ages defensive ramparts were built. The choice of the site of Markeli fortress is of great strategic importance.

The first fortress was built in Late Antiquity (4th – 6th century CE), as part of the fortification system of the Eastern Roman (Byzantine) Empire. The ceramics discovered during the archaeological excavations confirm its existence as early as the Late Iron Age (1st millennium BCE). In the Middle Ages, Markeli fortress played an important role in the political life of the Balkans (Момчилов 2009).

Kabyle

It is a village in south-eastern Bulgaria, located at the foothills of Zaichi Vrah, near the Tundzha River (Fig. 1). It is an ancient Thracian city, founded around the 4th century BCE. Mogila No. 3 is a part of the western cemetery in the Ivan Jordanova mogila locality in the vicinity of Kabyle. The burial mound is 18 m in diameter and is 1 m high. At a depth of 1 – 1.40 m, five non-inventoried secondary burials were discovered. In the Southeast sector, a secondary burial was found with an on-site cremation in a large pit (Велков и др. 1990).

Orlovo

The village of Orlovo is located 12 km to the southeast of Haskovo (Fig. 1). The archaeological site is a complex of negative structures interpreted as one of the so-called 'pit fields.' The structures have different shapes, depths and fill sequences. They belong to the Late Neolithic,

Early and Late Chalcolithic, Middle Bronze Age, Early and Late Iron Age, and probably had a variety of functions (utilitarian, ritual, economic, etc.) (Лещиков, Тодорова, Тонков 2019).

MATERIALS AND METHODS

The archaeobotanical samples were recovered from different archaeological contexts including ritual hearths, pits and burial contexts. Archaeobotanical remains were collected by flotation. A part of the material was collected manually. The identification of the plant remains, seeds and grains, was carried out using Novex a binocular microscope. For the identification of the grains and seeds we used the reference collection kept at the Department of Interdisciplinary

Research and Archaeological Map of Bulgaria at NAIM – BAS and atlases (Cappers, Neel & Bekker 2009; Vilarias 1992). The charred wood was defined by a microscope with reflected light. The use of such a microscope allows the structure of the charred wood to be directly observed. Three anatomical schemes were studied. These were transversal, longitudinal-tangential and longitudinal radial. For definition of the wood, specialized atlases and referent collections were consulted (Schweingruber 1988).

RESULTS

Messarite 4 – a rural complex of Apollonia Pontica's *chora*

The charred olive stones from Mesarite were found in 3 of the investigated ritual hearths at the site. The samples include sediments from three contexts. These were stratigraphic units: US 139, 157, 162. The hearths contained plant remains, fragments of bowls, loom weights, *lekkythoi*, *askoi*, astragalos and other representative ceramic vessels of this period. Olive stones were identified in the following contexts (Table 1).

Sq. J 0 – SU 139

The findings which represent charred remains of various types of fruits include 9 whole olive stones (*Olea europaea*), 3 peach stone fragments (*Pyrus sp.*), 1 almond fragment (*Prunus dulcis*), 8 hazelnut fragments (*Corylus avellana*) and small bread pieces, all placed in a hearth, near burial No 18. It can be dated to the last quarter of the 4th century BCE.

Sq. L 2 – SU 157

At the border between squares L 2 and M 2, near burials No 22 and No 23 – US 157, an open oval-shaped hearth was discovered. Several fragments of different types of plants remains were found. This includes a plum stone, one grain of bread wheat, as well as a half of an olive stone. The feature can be dated to the last quarter of the 4th century BCE.

Sq. J 4 – SU 162

During the excavation of the area in square J 4 – US 162, under and around a fish plate (near burial No 16 and a hearth) an olive stone was also found. The feature can be dated to the end of 4th – beginning of the 3rd century BCE.

The samples from **Water Cycle Site** originate mainly from the ritual hearth No 1 and burial No 1. In one of these samples 2 small olive stones were found. Thus, the total number of olive remains from the Mesarite site is 12 whole stones and 4 fragments.

Apollonia-Kalfata cemetery

The archaeobotanical remains were collected from 2 ritual hearths – No 2 and No 4 (Table 1).

Table. 1. Archaeological sites on the territory of Bulgaria with olive stones

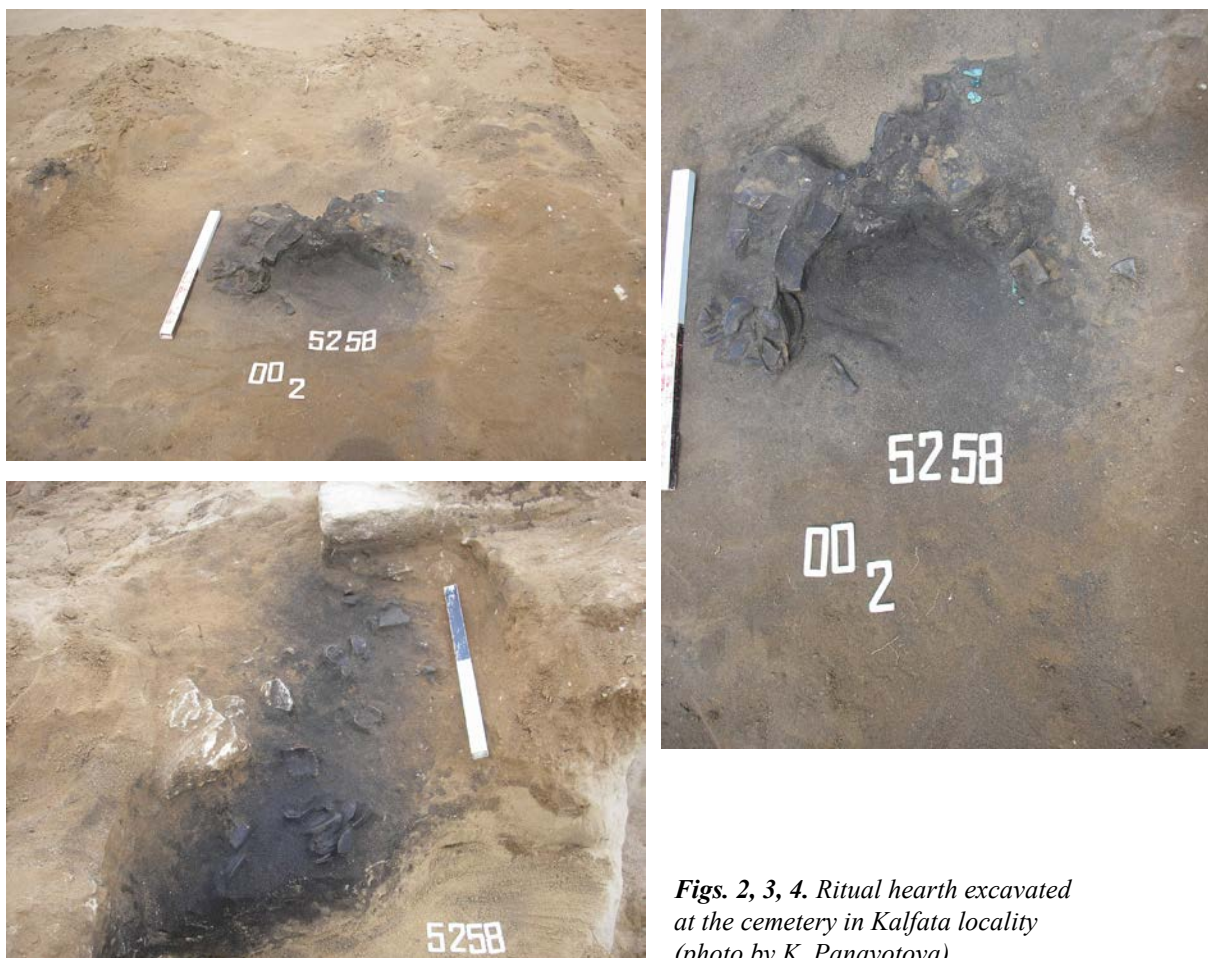
LOCATION	CONTEXT	PLANTS REMAINS	WHOLE	FRAGMENTS	DATES	AUTORS
MESARITE 4	sq. J 0 – US 139	<i>Prunus institia</i>	1		IV c. BC	Popova, unpublished
	hearth - 1/2 SUD	<i>Olea europaea subsp. europaea</i>	3			
	funeral, ritual food offering					
MESARITE 4	US 139 near burial N18	<i>Olea europaea subsp. europaea</i>	6	1	IV c. BC	Popova, unpublished
	funeral, ritual food offering	<i>Corylus avellana</i>		8		
		<i>Prunus amygdalus</i>		1		
		<i>Prunus persica</i>		3		
MESARITE 4	sq. L 2, US 157	<i>Pomoideae</i>		1	IV c. BC	Popova, unpublished
	near graves N 22 and N 23	<i>Prunus sp.</i>		1		
	funeral, ritual food offering	<i>Quercus sp.</i>		5		
		<i>Triticum aestivo/durum</i>	1	1		
		<i>Olea europaea subsp. europaea</i>		1		
MESARITE 4	Sq. J 4, US 162					Popova, unpublished
	near grave N16, hearth 1	<i>Olea europaea subsp. europaea</i>	1		IV – III c. BC	
	funeral, ritual food offering					
MESSARI- Water Cycle	hearth № 1	<i>Olea europaea subsp. europaea</i>	1		IV c. BC	Popova, unpublished
	funeral, ritual food offering					
KALFATA	UPI 5258 - hearth № 4	<i>Corylus avellana</i>	4		IV – II c. BC	Popova, unpublished
	funeral, ritual food offering	<i>Cornus mas</i>	4			
		<i>Olea europaea subsp. europaea</i>	1			
KALFATA	UPI 5098, hearth №2	<i>Pinus pinea</i>		21	IV – II c. BC	Popova, unpublished
	funeral, ritual food offering	<i>Pistacia vera</i>		1		
		<i>Olea europaea subsp. europaea</i>		2		
LIDL SUPERMARKET	hearth № 3	<i>Corylus avellana</i>	51		III c. BC	Popova, unpublished
	funeral, ritual food offering	<i>Prunus persica</i>	3			
		<i>Prunus institia</i>	1			
		<i>Prunus amygdalus</i>	2			
		<i>Olea europaea subsp. europaea</i>	26			
JATRUS FORTRESS	unknown context	<i>Oliva europea var. sativa</i>	2		IV – V c.	Neef 2007
KABYL	tumulus № 3	<i>Olea europaea subsp. europaea</i>	?		II c.	Velkov 1990
	funeral, ritual food offering	<i>Juglans regia</i>	?			
		<i>Phaenix dactilifera</i>	?			
		<i>Pinus pinea</i> - cone	?			
KAPITAN ANDREEVO	ritual pit	<i>Olea europaea subsp. europaea</i>	1		Early Iron Age	Hristova 2016
MARKELI FORTRESS	unknown context	<i>Olea europaea subsp. europaea</i>	1		IV – VI c. Late Antiquity	Hristova 2012
ORLOVO	pit (ritual?)	<i>Triticum monococcum</i>	8		2 – 1 c. BC	Hristova, unpublished
		<i>Triticum aestivo/durum</i>	16		Late Hellenistic period	
		<i>Panicum miliaceum</i>	3			
		<i>Olea europaea subsp. europaea</i>	1			

Hearth No 2 (UPI 5089)

The hearth is located 0.95m to the east of a skull found in grave No 37. Associated remains include, a fish plate, an amphora handle, which was found in the western part of the hearth, a kylix and other fragmented vessels. The archaeobotanical materials from this area consisted of 21 pine stones, 1 fragment of pistachio and 2 halves of olives. The feature can be dated to the second half of the 4th century BCE.

Hearth No 4 (UPI 5258)

The hearth is located to the east of the first block of parabolic sector 3. During the study of this facility charred kernels, fragments of *lekythoi* with palmette motifs, beads, weights, as



Figs. 2, 3, 4. Ritual hearth excavated at the cemetery in Kalfata locality (photo by K. Panayotova)

well as fragments of a fish plate, were discovered. The feature can be dated to 375 – 350 BCE (Figs. 2, 3 and 4).

Lidl Supermarket – Sozopol site. A burial facility dated to the 3rd century BCE was discovered. In hearth No 3 a variety of charred fruits were found. A total amount of 26 charred olive stones was found. They were deposited together with hazelnuts, peaches, almonds and plums.

Yatrus fortress

The archaeobotanical samples were collected by Neef (2007). They cover two occupation periods of the fortress. These are periods B/C (second half of the 4th century – first half of the 5th century CE). He reports the presence of a small number of peach stones (*Prunus persica*), cherry (*Prunus avium*), apple / pear (*Pyrus/Malus*) and two olive stones in the samples from period B (Neef 2007).

Markeli fortress

The presence of olive stones in the Markeli Fortress has been reported by I. Hristova (2015) but the exact context was not established. She reports only a single olive find. It is likely to be dated between the 4th and the 6th century CE, or more broadly during the Late Antiquity.

Kabyle – Mogila No 3

It is a part of the western cemetery in the area „Ivan Yordanova Mogila”. Olive remains were discovered along with other grave goods during the excavation of a secondary burial. The

burial inventory includes a gold earring, ceramic unvuentarium, ceramic jug, iron nails, charred stone, cone fragments, olive and figs and a poorly preserved bronze coin of the imperial ace from the beginning of the 2nd century CE from the period of Trajan or Hadrian (Velkov et al. 1990). Unfortunately, there is no information about the exact context nor the amount of olive stone remains.

Kapitan Andreevo

I. Hristova (2015) reports an olive stone in the analysis of Kapitan Andreevo ritual pits. She writes: “Barley and hulled wheat (especially einkorn) are the dominant species in the samples from the EIA. Leguminous crops are presented only by a single item of grass pea. The olive (*Olea europaea*) stone is an interesting find as well”.

Orlovo

Structure No 179.3 is dated to the Late Hellenistic period, approximately 2nd – 1th centuries BCE (Лещakov, Тодорова, Тонков 2019). The pit contained a layer of fragment plasters charcoal, charcoal remains and the olive stones. Olive remains were found together with einkorn, bread wheat, millet and charred oak wood fragments.

DISCUSSION

The analyzed material from ritual hearths and pit sanctuaries, investigated in the territory of the Bulgaria provides important information about the the practice of funerary rites related to the use of plants or plant products.

All olive remains were charred. The good preservation of the olive remains allowed their identification as *Olea europaea subsp.europaea* (Figs. 5, 6).The findings from the five sites of cemetery at Kalfata, Messarite 4, Lidl Supermarket, Whater circle and Kabyle – Mound No 3 are connected with ritual contexts, namely with hearths. The find from the Kapitan Andreevo site was discovered in a ritual pit. For Markeli fortress and Yatrus fortress we do not have accurate information about the exact location of the discoveries. A total number of 29 whole and 19 fragmented olive stones were found in the burial facility at the site Lidl Supermarket – Sozopol. In Kalfata olive is represented by 2 charred stone halves, and in Messarite 4 ten whole kernels were found.

Plant remains from ritual hearths in the cemeteries reveal important aspects of the funeral practices related to plant food use, and also provide valuable information on the prevalence of different plant species in a given area, and the diet of the ancient people.



Figs. 5, 6. Charred olive stones from the archaeological site Lidl Supermarket (photo by Tz. Popova)

At the sites mentioned above, olive stones were found together with other archaeobotanical remains such as pine nuts, hazelnuts, pistachios, almonds, walnuts, grape pips and peach stones, which represent the use of ritual food (Popova, Hristova 2017; 2018). In the present archaeological context, fruits occupy a large percentage of the plant remains. This suggests that they had a special role in the diet and daily life of the ancient societies. Perhaps some of them were charged with certain symbolic functions. Prevailing in the discussed sites are the following fruits: almonds (*Prunus dulcis* L.), figs (*Ficus carica* L.), grapes (*Vitis vinifera* ssp. *vinifera*), walnuts (*Juglans regia* L.), pears (*Pyrus communis* L.), hazelnuts (*Corylus avellana* L.), pistachios (*Pistacia vera* L.), pine nuts (*Pinus spinea* L.) and olives (*Olea europea* ssp. *europea* L.). They were burned in special ritual fires, often located near the grave pits. The question remains when and where these plant remains were burned. We can also ask, whether they were burned with the body of the deceased or separately and whether the burning of organic grave offerings took place the same day or the following day as the cremation itself. E. Margaritis and M. Jones offer an interesting hypothesis. When burning the bones, a very high temperature must be ensured for performing the ritual (Margaritis, Jones 2008). By the means of experimental burning, E. Margaritis and M. Jones prove that at 400°C the olive oil will burn and at 470°C it turns into ashes, suggesting that two combustion processes occurred (Margaritis, Jones 2008). According to them, there is a process of depositing the plants products – the second burning process has a controlled temperature (acts of destruction and acts of preservation). This model could possibly also be applied to the investigated ritual hearths of the cemetery of ancient Apollonia Pontica, which would be confirmed by the good preservation of the remains. Regardless of whether the dead body was burnt or buried, whether a *stelae* or a mound rises above its burial, the remains founded in the ritual hearths indicate that food was an integral part of funeral rituals. The burning of gifts in ceremonial fires was only one of the manifestations of the worship of the deceased, which continued with periodic visits and libations at their burials (Панайотова 1998).

ARCHAEOBOTANICAL EVIDENCE

Olive remains have been discovered at numerous sites in the Mediterranean area. The earliest olive findings, probably wild, are from several settlements in Israel (Table 2). Kislev et al. (1992) reported the findings of olive from the following sites: the settlement of Ohalo II, Sea of Galilee, Israel, dated Epi-Paleolithic; Nahal Zehora, Mount Carmel dated to 8150 – 7850 cal BP Pottery Neolithic, (Kislev, Hartmann 2012); Mount Carmel, 7000 BP, Late Neolithic (Galili et al. 1989) and Dhali Agridhi Aceramic Neolithic (Stewart 1974). Olive is one of the most important plants, whether it is for the production of olive oil or for direct consumption of the fruit. Archaeobotanical evidence of one of the earliest olive finds in Greece shows that its use began during the Bronze Age. The materials from the Early Bronze Age settlement of Dhaskalio such as stones, leaves and charred wood remains also prove its use (Margaritis 2013).

“...Olive trees were initially managed for their branches and their leaves to produce fodder, fuel and building material. Pruning produced stronger and more numerous branches which led to the production of better fruits.” (Margaritis 2013).

Detailed summary of the findings of olive stones and charcoal from a number of archaeological sites, covering the period 7000 – 2000 BCE in Greece is given by Valamoti et al. (2018). On the basis of these data S. Valamoti et al. (2018) conclude that olive cultivation was introduced in the Aegean region in 4 000 BCE and the production of olive oil was primarily for

Table 2. Archaeobotanical evidence for olive stones (*Olea europaea subsp. europaea* L.)

Location	Country	Identification	Date	References
Ohalo II, Sea of Galilee	Israel	Olea – gathering	Epi-Palaeolithic	Kislev et al. 1992
Nahal Zehora, Mount Carmel	Israel	Olea – gathering	8,150 – 7,850 cal BP Pottery Neolithic	Kislev, Harlann 2012
Mount Carmel	Israel	Olea – gathering	7000 B. P. – Late Neolithic	Galili et al. 1989
Dhali Agridhi	Cyprus	<i>Olea europaea subsp. europaea</i>	Aceramic Neolithic	Stewart 1974
			Aceramic Neolithic	
Cap Andreas Kastros	Cyprus	<i>Olea europaea subsp. europaea</i>	Aceramic Neolithic – 6400±200 to 7,755±125 uncal BP=8700 – 6800 cal BP	van Zeist 1981
Khirokitia	Cyprus	<i>Olea europaea subsp. europaea</i>	Aceramic Neolithic; cal 7500 uncal BP ca. 8400 – 8200 cal BP	Waines and Stanley Price 1975
Grotta dell'Uzzo, Sicily	Italy	<i>Olea europaea subsp. europaea</i>	Middle Neolithic (ca. 6750 – 6450)	Constantini 1989
Cova de Cendres	Spain	<i>Olea europea</i> <i>var. oleaster</i>	Early Neolithic (Cardial culture) 6340±70 uncal BP=7400 – 7050 cal BP	Buxo 1997
Cueva de Nerja, Malaga	Spain	<i>Olea europaea subsp. europaea</i>	Late Neolithic 5065±140 uncal BP ca BP 6200 – 5500 cal BP	Hopf and Pelicer Catalan 1970
El Argar culture sites	S-E Spain	<i>Olea europaea subsp. europaea</i>	Early Bronze age (ca. 4150 – 3350 cal BP)	Stika, Jurich, 1998
Nahal Oren, Mt. Carmel	Israel	<i>Olea europaea subsp. europaea</i>	Natufian and Early Neolithic	Noy et al. 1973
Tuleilat Ghassul	Israel	<i>Olea europaea subsp. europaea</i>	Chalcolithic (ca 6800 – 5800 cal BP)	Zohary and Spiegel-Roy 1975
Tell Saf	Jordan	<i>Olea europaea subsp. europaea</i>	Chalcolithic	Gophna and Kislev 1979
Tel Shuna North	Jordan	<i>Olea europaea subsp. europaea</i>	Chalcolithic	Neef 1990
Tell Abu Hamid	Jordan Valley	<i>Olea europaea subsp. europaea</i>	Chalcolithic	Neef 1990
Arad	Israel	<i>Olea europaea subsp. europaea</i>	Early Bronze Age ca. 4900 – 4700 cal BP	Hopf 1978
Bab edh-Dhra	Jordan	<i>Olea europaea subsp. europaea</i>	Early Bronze Age cal 4900 – cal BP	Mc Creery 1979
Tell es Sa'idiyeh	Jordan	<i>Olea europaea subsp. europaea</i>	Early Bronze Age	Cartwright 2003
Tell Sukas	Syria	<i>Olea europaea subsp. europaea</i>	5000 BP	Helbaek 1962
Troy	Turkey	<i>Olea europaea subsp. europaea</i>	ca. 4850 – 4200 cal BP	Riehl 1997
Makri, Alonia	Greece	<i>Olea europaea subsp. europaea</i>	Early and Middle Bronze Age	Adams and Simmons 1996
Dhascalio	Greece	<i>Olea europaea subsp. europaea</i> <i>stones and leaves</i>	Early Bronze Age	Margaritis 2013
97 archaeological sites	Greece	<i>Olea europaea subsp. europaea</i>	7000 – 3000 BC to the late 1 st millenium	Valamoti, et al. 2018
Agia Aikaterini Square Kastelli, Khania	Greece	<i>Olea europaea subsp. europaea</i>	Minoan period	Sarpaki 2016
Latare	France	<i>Olea europaea subsp. europaea</i>	475 – 350	Alonso, Rovira 2009
Tarrega Leida	Spain	<i>Olea europaea subsp. europaea</i>	2800 – 2000 BC	Alonso, Perez-Jorda, Rovira 2015
Galera Granada	Spain	<i>Olea europaea subsp. europaea</i>	1300 BC	Alonso, Perez-Jorda, Rovira 2015
Ulastret, Girona	Spain	<i>Olea europaea subsp. europaea</i>	4800 – 600 BC	Alonso, Perez-Jorda, Rovira 2015
Moixent, Valencia	Spain	<i>Olea europaea subsp. europaea</i>	600 – 500 BC	Alonso, Perez-Jorda, Rovira 2015
Tivissa-Tarragona	Spain	<i>Olea europaea subsp. europaea</i>	600 – 200 BC	Alonso, Perez-Jorda, Rovira 2015

the elites and ritual purposes. It began to increase during the Bronze Age and reached its peak during the Mycenaean period.

According to Karnava, Kolia and Margaritis (2015) the earliest evidence of olive oil production and its equipment can be traced back to the 1st millennium BCE in Klazomenai on the east coast of the Aegean Sea (6th century BCE). The archaeological site of Azorias in Crete included facilities and part of the equipment of an oil press, dated also to the Archaic period. Partial evidence of oil production is found in different archeological sites such as: (Halieis in the Argolid, Rachi and Isthmia, Olynthos/Argilos/Vrasna and Chalcidice) dated to the 4th to 3rd centuries BCE. Keos facilities and complete on-site equipment prove the uniqueness and successive stages of olive oil production. The facility was built during the classical period and continued to be used until the late Hellenistic period (Karnava, Kolia, Margaritis 2015).

CONCLUSION

The studied olive remains from the territory of Bulgaria belong to the 5th to 3rd centuries BCE. During this period in the Mediterranean region and Greece olives were not only being consumed directly, but also used for olive oil production.

So far, the presence of olives in the territory of Bulgaria has been very poorly recorded.

The climatic conditions of this territory do not allow the olive tree to develop. This proves that olives were the subject of trade relations with neighboring countries and were highly valued to be placed in burial contexts.

In this regard, the archaeobotanical evidence of these 9 archeological sites is of particular interest and it is in the Mesarite 4, as well as in the cemetery of Kalfata, that the earliest olive findings for the territory of Bulgaria are documented. They show that in the 3rd century BCE olive was also an imported valuable product and, among other imported species, such as stone pine nuts and figs, it was present not only as a food but also in ritual activities and funerary rites (Popova, Hristova 2017).

The information obtained sheds light on those of significance of this kind, not only as a nutritional resource but also as an important attribute in ritual practices.

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Нови археоботанични свидетелства за *Olea europaea subsp. europaea* от територията на България

Цветана Попова

РЕЗЮМЕ

Тази статия представя нови археоботанични данни за появата на маслината на територията на България. Находки на маслини в археологическите обекти досега почти не са регистрирани въпреки значителните археоботанични изследвания. Статията се фокусира върху резултатите от археоботанични изследвания на овъглени останки от маслини, открити в 9 археологически обекта на територията на страната. В резултат на анализите се доказва, че най-ранните находки на култивираната форма *Olea europaea subsp. europaea* от територията на България се датират между V и III век пр. Хр. Материалът, получен от ритуалните огнища в некропола на територията на Созопол (Аполония Понтика), дава важна информация за някои от практиките при погребалните обреди, свързани с използването на растения. В тази връзка археоботаничните доказателства от тези 9 археологически обекта представляват особен интерес. Очевидно е, че през III в. пр. н. е. маслините са били внесени заедно с други видове, като шам фъстък, пиния, фурми и др. Присъствието ѝ показва външни контакти със Средиземноморския регион. Получената информация хвърля светлина върху значението на *Olea europaea subsp. europaea*, не само като хранителен ресурс, но и като важен атрибутивен елемент в ритуалните практики.

Ключови думи: маслина, археоботанични данни, ритуални практики, България