CHAPTER **11**

THE DIET IN THE ROMAN PERIOD THROUGH THE STUDY OF SITES WITH WATERLOGGED ASSEMBLAGES: THE CASE STUDY OF GUISSONA (CATALONIA, SPAIN)

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Abstract

The recovery of archaeobotanical assemblages preserved under anoxic conditions (in waterlogged environments) is a rare phenomenon in the Mediterranean, as opposed to central and northern Europe. One of the few sites in the western Mediterranean that offer such contexts is the site of Guissona (Catalonia, Spain), dated to the Roman period. This article presents the preliminary archaeobotanical findings from one of the wells excavated at this site. Other Roman sites with waterlogged preservation in the area are also presented to provide an adequate framework for the contextualisation of the results. The study of the assemblage indicates that fruits and nuts were part of the diet of the Roman population, even if they are not common archaeobotanical finds. The species that are detected in archaeobotanical assemblages are the result of several factors. Therefore, this paper concludes with an exploration of the reasons behind the relative rarity of certain taxa in Roman assemblages.

Introduction

Although archaeobotanical studies have developed and significantly evolved, many archaeological sites do not benefit from the information the study of archaeobotanical remains can provide. While there is a legal requirement to take archaeobotanical samples in all northern European excavations, the situation is different in the northern

Mediterranean. In the excavations of several prehistoric sites in Greece, especially those that are systematically studied, the sampling and study of archaeobotanical remains is foreseen, mainly due to the efforts of archaeobotanists. In recent years, an increasing number of archaeobotanical studies have been carried out at Classical and Roman sites in Greece (e.g., Megaloudi et al., 2007; Margaritis, 2016; Douché et al., 2021), although there is still a long way to go towards the incorporation of archaeobotanical studies in excavations of historical periods. In Italy and Spain (e.g., Murphy et al., 2013; Mariotti Lippi et al., 2020), many sites of historic periods provide archaeobotanical data, partly due to the research interests of local archaeobotanists. Indeed, in the Iberian Peninsula, in recent years, the collection and study of archaeobotanical remains from Roman and medieval sites has increased substantially (Peña Chocarro et al., 2017).

For the Roman period, texts and other sources are also available, reporting events and activities related to diet that were considered important by the historiographers of the time. However, often, important details are missing, and information is selective. Not all social groups were using a writing system, and as a result, many aspects of their daily lives could not be retrieved from sources (Van der Veen 2018, 53).

During the Roman period, there were frequent population movements, and new cities were founded throughout the empire. Because of these population movements, certain new food habits spread throughout the Roman Empire (e.g., Garnsey, 1999; Bakel and Jacomet, 2003; Erdkamp, 2005; Van de Veen et al., 2007; Livarda, 2011). As a result, the culinary map across the Empire started changing (Greig, 1983). Archaeobotanical studies showed that during the 1st and 2nd centuries AD, the Romans introduced a series of products across the Roman Empire and the Iberian Peninsula in particular that were not widely available before (e.g., Peña-Chocarro et al., 2017). Gradually, the demand for certain imported products increased and, as a result, some of them were taken up for cultivation in the Iberia peninsula (e.g., *ibid*.). In contrast, others that could not be cultivated in areas with specific environmental conditions had to be transported from further afield. This gave these products an *'exotic flavor',* as they were not easily accessible (Livarda, 2011; 2018). Exotic or valuable products were defined as those that were not essential for survival and were consumed on specific occasions and/or by specific groups of people (Bakels and Jacomet, 2003).

This paper adds to these discussions and presents the preliminary data from the archaeobotanical study of one of the best-studied contexts, the well 4, of the Roman settle-

ment of Guissona (Catalonia, Spain) dating to the mid-1st century AD - 2nd century AD. Guissona is one of the few sites in the Mediterranean that preserves archaeobotanical material in the anaerobic preservation of permanent moisture (henceforth referred to as waterlogged), while charred remains are also present. To illustrate why it is rare to find sites with waterlogged material in the Mediterranean, but also their importance for obtaining more information, a brief discussion of the types of preservation of archaeobotanical remains is made. Furthermore, the archaeobotanical finds from other Roman sites on the Iberian Peninsula with waterlogged assemblages are summarised to highlight any similarities and/or differences in the dietary habits of the period.

Types of preservation of archaeobotanical remains

The principal forms of preservation of archaeobotanical material are a) carbonization/charring, b) waterlogging, c) mineralization, or d) desiccation (e.g., Van der Veen, 2007, 968).

The most common type of preservation of archaeobotanical remains is by charring. This means that a prerequisite for the preservation of plant parts is their exposure to fire. The temperature of the fire and the length of time the plant remains were exposed to the fire (Boardman and Jones, 1990), as well as post-deposition conditions (e.g., pH of the soil), can affect the preservation of charred plant remains (Braadbaart et al., 2009). At the same time, the natural characteristics of the remains (e.g., their size, shape, moisture content, etc.) have a crucial role in determining whether they will be preserved and how (e.g., Boardman and Jones, 1990; Wright, 2003; Livarda, 2019). It should be noted that fruits, nuts, and spices are not often found charred as they are consumed fresh, unlike cereals and pulses, which normally need to come into contact with fire to be turned into food (e.g., Jacomet, 2013; Van der Veen, 2007; Livarda, 2011; Margaritis, 2011). In contrast, such remains are quite common in waterlogged deposits.

The term waterlogged refers to archaeological contexts below the groundwater table. Deposits with anaerobic preservation can be found in areas with a dry climate where structures, such as wells, reach the height of the underground aquifer (Jacomet, 2007;

2013). In addition, they can be found in sites where the stratigraphy descends to a great depth or in sites where the water table rises to a greater height (Jacomet, 2007; Livarda, 2019). If the water level has remained the same from the time of deposition until the time of excavation, the preservation of organic remains (e.g., wood, fruit, seeds, etc.) will be better (Jacomet, 2013). It should be noted that archaeobotanical remains conserved under anaerobic conditions are generally better preserved and can, therefore, provide more information (Jacomet, 2007). Indeed, a characteristic of better conservation is the fact that waterlogged sites usually have a larger number of finds (Jacomet, 2013). Additionally, more categories of plant remains (e.g., aromatic plants, oil-rich plants, fruits, and spices) are found compared to charred archaeobotanical assemblages (Livarda, 2019). Plant parts recovered from waterlogged sites keep better their natural characteristics (McCobb et al., 2001).

The archaeobotanical assemblage of Guissona consists of both waterlogged and carbonized material, allowing a more holistic view of its plant dietary resources.

Roman Guissona (Iesso)

The modern town of Guissona (Roman Iesso) is located in the region of Segarra (Catalonia, Spain), in the province of Lleida (Figure 1). The Roman town was founded in 120 BC and was inhabited at least until the 7th century AD. In total, it occupied an area of about 15-18 hectares and was surrounded by a wall of about 2.5-3m width (Romaní et al., 2022) (Figure 2). *Iesso* was one of the most important sites in the region. It was a Roman *municipium* and had a significant role in territorial control, establishing road connections between the mainland and the coast in the northeast of the peninsula (Pera, 2016). The fact that the modern town has not completely covered the previous remains allowed the retrieval of a significant amount of information about its historical past (Guitart 1996-1997, 815).

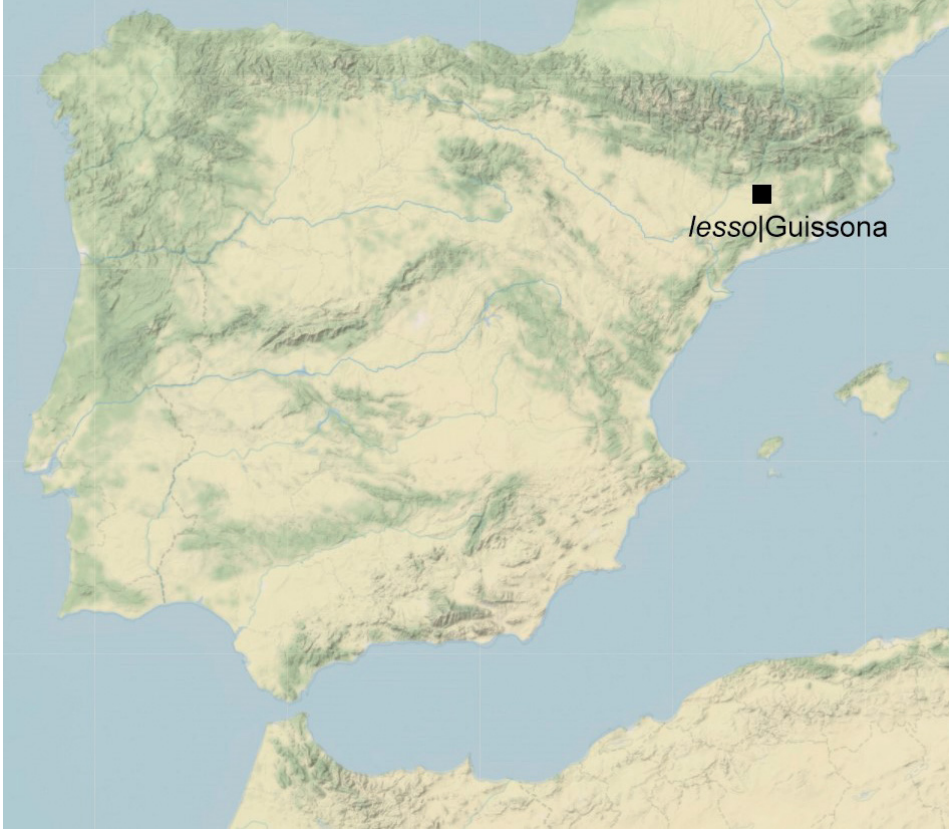

Figure 1. The location of Guissona on the map of Spain (Photo from TIR-FOR Project, ICGC. Generalitat de Catalunya)

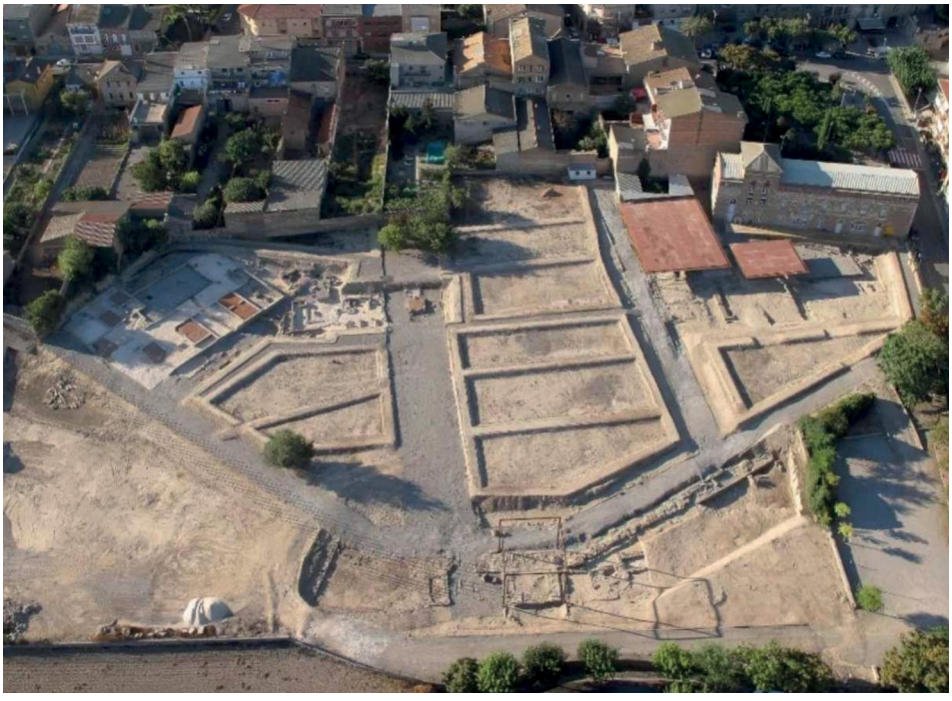

Figure 2. Aerial view of the Archaeological Park of Guissona (Photo by Iesso Team)

A total of five wells have been identified and excavated. All of them yielded waterlogged and charred archaeobotanical material. Of these, two have been studied and published (Buxó et al., 2004), and the other two are currently under study in the context of the *Research Project 'Urbanisation, commerce and foodways in the Roman world'.* For the purposes of this paper, the data obtained from the study of the well 4 are reported. As mentioned, waterlogged sites are rare in the Mediterranean, while Roman sites in the Iberian Peninsula with this type of preservation are limited (Peña-Chocarro et al., 2017). In the Catalan territory, Guissona is one of the first Roman sites reporting waterlogged remains.

Excavation methodology of well 4 in Guissona

In 2021, the fourth well in Guissona was excavated. The archaeological works of this well were divided into two phases following the same system of the previous wells (see Buxo et al., 2004). The excavation process was divided into two stages. The first stage involved the removal of the dry soil that was inside the well, following standard procedures. During the archaeological works, water gushed from the well. From the level of water occurrence downwards, the material removed from the well remained in the water (Guitart Duran et al., 2021, 25). The well reached a depth of 4 meters and had a diameter of 90-100cm.

During the sampling process, the procedure should be as systematic as possible in order to collect all the necessary information in the field, which will then help better understand and interpret the material. Regarding the sampling of the wells at Guissona, it was difficult to identify excavation layers. Therefore, the excavators chose to divide the well into artificial levels, each of which had an average height of 50cm. However, when they detected any variation in the composition of the soil during the excavation, they changed the layer. In total, four layers were excavated.

The material was removed from the well in volumetric buckets (Figure 3); the number of the buckets and their volume were recorded, and then it was taken for wet sieving. During the processing of the material, three sieves of 5mm, 1mm and 0.5mm mesh opening were used to ensure that all possible residues were recovered (Figure 4). After cleaning, the material was placed in plastic bags and covered with deionized water.

Figure 3. Excavation of the well (Photo by Iesso team)

Figure 4. Cleaning of the material (Photo by Guissona Museum)

The material was transferred to the Catalan Institute of Classical Archaeology (ICAC) where it is currently under study by the author. During the sorting process, all material coming from the 5mm sieves was sorted, while the material deriving from smaller sieves was sub-sampled, as the liters collected from each layer were very rich in archaeobotanical material. In the laboratory, for better material handling, a column of different sizes of sieves was used with mesh sizes ranging between 4mm and 0.25mm. Sorting of the samples was conducted using a stereoscope with magnifications of 10x/23x. The collected material was placed in deionized water and stored in a refrigerator at 4°C. Atlases and comparative collection with species of the area were used for the identification of the seeds (e.g., Sabato & Peña Chocarro).

The first two wells of Guissona are located in a residential area of the town, and they have been studied by R. Buxó and D. Canal. They are only 2 meters apart, but the archaeological data indicates that they were in use in different periods (Buxó et al., 2004, 214). When well 1 was constructed, well 2 was already abandoned. More specifically, well 1 is estimated to have been used in the 1st century AD while it was abandoned and completely covered in the second half of the 2nd century AD. Well 2 is earlier and was in use between the Late Republican period and the first half of the 1st century AD, when it was abandoned (Buxó et al., 2004, 214).

Well 3 is located near a building outside the city, next to the fortification wall, which has been interpreted as a possible inn for travelers who would have enjoyed accommodation and meals in this area (Romaní and Rodrigo, 2020, 51). The inn dates to between the first half of the 1st century AD and the end of the 2nd century AD/beginning of the 3rd century AD, when the use of both the building and the well ceased (Romaní and Rodrigo 2020, 42). Well 4, which is the focus of study in this paper, is located north of the public baths, within a garden (Figure 5). It was in use from the middle of the 1st century AD until the 2nd half of the 1st century AD when it was abandoned (Guitart Duran et al., 2021). It is not possible to distinguish different episodes of use of this well. All the material dates back to the same period. It is possible that the finds inside the well are the result of people trying to seal the well by filling it to the brim with material from the surrounding environment. It should be noted that the enumeration of the wells refers to the order in which they were excavated, and it is not indicative of their chronological sequence.

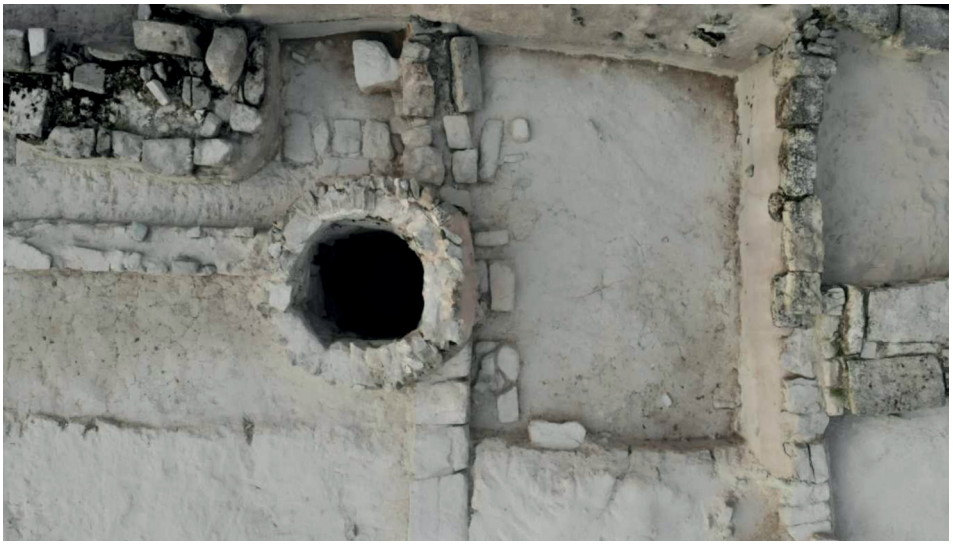

Figure 5. Well in the public baths (Photo by Iesso Team)

Results: The archaeobotanical remains from Guissona and other Roman sites in the Iberia peninsula

In the first two wells of Guissona, most of the finds come from the lower layers. The findings show that fruits (e.g., cherries, peaches, plums, grapes, melons, figs, and olives), but also nuts (e.g., walnuts, almonds, hazelnuts, and acorns) were consumed (Buxó et al., 2004). Concerning cereals and pulses, their presence is very limited. Few cereal grains of *Triticum aestivum/durum, Hordeum vulgare,* and *Triticum dicoccum* were retrieved from the two wells, while few *Triticum aestivum/durum* rachis fragments were detected. Concerning pulses, only one seed of *Vicia sativa* and *Pisum sativum* were identified (Buxó et al., 2004).

From the examination so far of the archaeobotanical material from well 4, a variety of fruits and nuts have also been recorded, similar to those found in the other two wells,

suggesting a continuity in the eating habits of the inhabitants of the site. More precisely, the species represented are mainly fruits, dominated by figs (*Ficus carica*) (Figure 6) and grapes (*Vitis vinifera*), represented both by pips and pedicels (Figures 7 and 8). So far, cherries (*Prunus avium/cerasus*), plums (*Prunus domestica*), peaches (*Prunus persica*) (Figure 9), and olives (*Olea europaea*) have been identified (Figure 10).

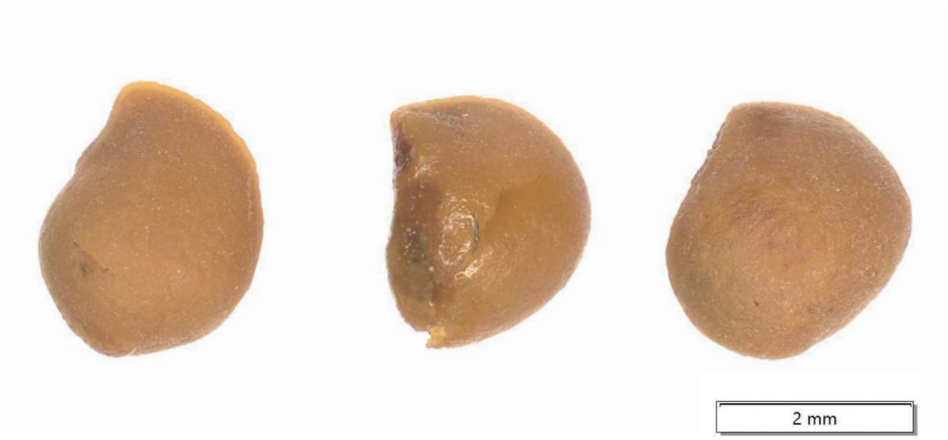

Figure 6. *Ficus carica* (Photo by Th. Baniou)

Figure 7. *Vitis vinifera pips* (Photo by Th. Baniou)

Figure 8. *Vitis vinifera pedicels* (Photo by Th. Baniou)

Figure 9. *Prunus persica* (Photo by Th. Baniou)

Figure 10. *Olea europea* (Photo by Th. Baniou)

In addition, several wild species have been found, including species of the families of Polygonaceae, Asteraceae, Chenopodiaceae, and Lamiaceae, which are mainly associated with the vegetation surrounding the well. The presence of cereals is limited. All cereals have been found in charred form. Finally, in comparison with the findings of the two aforementioned wells, a new species has been identified from the study of well 4, Lagenaria siceraria, which is the earliest find in the Iberian Peninsula. More detailed identifications will become available as the study of the material is completed. The evidence so far suggests that many of the archaeobotanical finds originate from the environment around the well, as the location of the well was within a garden. The few cereals that have been found within the well may represent food waste.

As mentioned above, in the Iberian Peninsula, there are only four other cases of Roman sites with waterlogged preservation (Peña-Chocarro et al., 2017), three of which date back to the 1st and 2nd centuries AD, similar to the fourth well of Guissona. More specifically, the Calle Tadeo Murgia and Calle Santiago sites in the modern city of Irun (Basque Country, Spain) have produced archaeobotanical finds, which were recovered from harbor structures and represent either the waste of different activities or are plant remains of species that grew in the surrounding area (Peña Chocarro and Zapata, 2005, 167). The archaeobotanical study showed the presence of mainly fruits (cultivated or wild) and other wild species. Regarding fruits and nuts, hazelnuts (*Corylus avellana*), acorns (*Quercus sp.*), walnuts (*Juglans regia*), blackthorn (*Prunus spinosa L.*), pine nuts (*Pinus sp.*), almond (*Amygdalus communis*), cherries (*Prunus avium/cerasus*), plums (*Prunus domestica/insitititia*), peaches (*Persica vulgaris*), olives (*Olea europaea*), figs (*Ficus carica*), blackberries (*Rubus agg. fruticosus*), Fagus sylvatica and wild grapes (*Vitis sylvestris*) were present, with cherries (*Prunus avium/cerasus*) dominating the assemblage. Concerning cereals, only one Triticum sp. grain has been identified so far (Peña Chocarro and Zapata, 2005, 168).

The O Areal site (Galicia, Spain) is a saltwork area, which was in use between the 1st and 2nd centuries AD and was abandoned at the end of the 3rd/ 4th century AD (Teira Brión 2010, 200). The majority of archaeobotanical finds come from waste related to human activities. Among others, hazelnuts, walnuts, chestnuts (*Castanea sativa*), pine nuts (*Pinus pinea*), olives, figs, wild cherries (*Prunus avium*), cherries, peaches, and cultivated and wild grapes have been found (Teira Brión 2010, 202). Most of the taxa recovered are species that can be consumed by humans apart from

Rhamnus frangula, which is toxic, although it could be used to produce vegetable dye (Teira Brión 2010, 203). After the site was abandoned, the site was used as a dumping ground by the surrounding areas. Cultivated and wild species were also collected from this period of use (Teira Brión 2022, 600-603).

In excavations outside the walls of the town of Idanha a Velha (Monsanto e Idanha-a-Velha, Portugal), a well was found dating between the 1st and 2nd centuries AD (Almeida and Ferreira 1967, 57). The archaeobotanical remains provide evidence of the diet of the inhabitants of the area, which included walnuts, olives, pine nuts, plums, pomegranate (*Punica granatum*), grapes, and peaches, among others (Almeida and Ferreira 1967, 59-60). It should be clarified that the aim of the study was simply to identify the species found in the well, and the identification of the species was carried out by an agronomer (Almeida and Ferreira 1967, 59; 63), separating the finds from their archaeological context.

Finally, the site *Aquae Flaviae* (Chaves, Portugal), a healing spa with different structures, allowed the waterlogged preservation of archaeobotanical material. It was in use from the 1st century AD until the 4th century AD (Vaz et al. 2016, 87; 89). Six structures related to water (pools, cloaca, *castellum aquae, and conduit*) *have been excavated, and fruits and nuts* (*e.g., walnuts, olives, wild cherries, peaches, plums, blackthorn, chestnuts, and pine nuts*) have been identified. The finds belong to species that were growing or cultivated in the surrounding area (Vaz et al. 2016, 88, 95-96). The absence of several other species can possibly be explained by the fact that the archaeobotanical material was collected only by hand during excavation (Vaz et al., 2016, 99).

Discussion

Overall, based on the archaeobotanical studies of the Iberian Peninsula of both waterlogged and charred material, it appears that during the Roman period there was a wide variety of cultivated fruits available for consumption. Some of them were even introduced to the region in this period; these species are Prunus domestica, *Prunus persica,* and *Cucumis melo/sativus* (Peña Chocarro et al., 2017, 13, 15-16). It should be noted that the Iberian Peninsula is characterized by a diverse ecological environment and landscape, resulting in

an abundance of flora varieties (Peña Chocarro et al., 2017, 2). This probably explains the presence of species (e.g., chestnuts) in only some of the mentioned sites. People must have exploited the wild resources in the surrounding areas while at the same time they were cultivating or importing other species that were part of their diet.

From the archaeobotanical data presented above, the dominance of fruits and nuts in waterlogged samples is evident. From these sites, it appears that during the 1st and 2nd centuries AD, walnuts and olives were part of people's diet, as they were found in all sites. From the wells of Guissona and the harbor structures in the town of Irun, sites from which the archaeobotanical material was collected and studied extensively, there is a strong presence of figs, grapes, and cherries. It is worth noting that only in the wells of Guissona and at the site of Irun cereals were present, albeit in small quantities. Their limited presence may be due to the fact that in order to be eaten, cereals, like pulses, need to be cooked. On the contrary, fruits and nuts are eaten raw and are easier to consume on the street or during work, which could justify their presence in these specific contexts of wells and harbor structures.

The archaeobotanical remains retrieved from the excavation works at the sites of Idanha a Vella and Aquae Flaviae are particularly limited, which is justified mainly by the way the materials were sampled and studied. The absence of certain species, therefore, does not automatically mean that they were not consumed/used.

It is a fact that the role of wild plants is very important for the survival of individuals over time. Although in Roman times cultivated species were the main source of food, wild fruits (such as wild grapes) and nuts must still have been an important element for the survival of the population, as they are edible and could be consumed. Many of the wild species could be used as seasonings, ingredients for medicinal preparations, and for consumption (Peña Chocarro and Zapata 2005, 169), and their importance is yet to be studied at Guissona.

To sum up, this brief review highlights the great potential these exceptional preservation conditions offer in shedding light on aspects of diet and revealing the use of food items that are otherwise rarely found archaeologically, but also the need for systematic and careful collection of samples for the study of the archaeobotanical material. The identification of seeds, of course, depends largely on the experience of the researcher studying the archaeobotanical material, on the access to comparative collections, and on atlases containing the species found in each region. Historical sources and ethnographic

observations can complement our knowledge of the ways in which food was cultivated, processed, and consumed, but under no circumstances can replace archaeological observations. With the completion of the study of the archaeobotanical remains from the wells of Roman Iesso, it is expected that important new information on Roman dietary practices in the area will be added.

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