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GARUM, FISH BLOOD TABOOS IN THE JUDAEO-CHRISTIAN WORLD AND THE EVOLVING NATURE OF ANCIENT FISH SAUCE

Abstract. The consumption of a fermented fish sauce appears as a fundamental part of Roman and Greek cuisine at every level of society and, in terms of amphora distribution, it was popular and widely consumed in every region of the empire. In the late Roman period, the fish sauces that were available appear to have subtly evolved in ways that reflect different attitudes to the consumption of fish blood. Sauces fermented using indigenous digestive enzymes from the viscera are in some instances rejected and replaced with the already familiar eviscerated and aged saltfish brines. These changes, though difficult to discern, may in part be related to the Judaeo-Christian prohibition on the consumption of blood which, though normally associated with meat, can also be understood to relate to fish blood. These differing attitudes towards fish sauce in relation to blood are to be found in orthodox Jewish and Christian communities in Palestine, Syria and Cyprus. In the late republic/early empire there appears to be three types of sauce and immense differences in quality depending on the species of fish employed, presence and absence of blood and viscera, salinity and the duration of fermentation. Under the Byzantine empire there is continuity in the consumption of an enzyme fermented sauce, though not as widespread, while in the West, fish sauce had become unpopular in some quarters, and scarce in terms of trade. This period of transition between what was widespread popularity and consumption in the Roman empire to irregular scarcity in the Christian West is discussed in this paper in relation to perceptions of food prohibitions.

Keywords: *garum*, ancient fish sauce, Roman and Greek cuisine, taboos

Ancient *garum* was once poorly understood. It was seen as profoundly strange and disturbing to modern western palates. Seneca spoke for many modern historians and archaeologists when he says that

garum sociorum, that costly extract of poisonous fish, burns up the stomach with its salted putrefaction (*Ep.* 95).



Ancient fish sauces were viewed with distaste, largely because no-one could quite comprehend how a sauce made with fermented fish viscera could ever produce something that could be perceived as a desirable and expensive commodity. We have moved on of course, South East Asian fish sauces and modern versions of *garum* are becoming popular and their ability to provide umami: a meaty, savoury deliciousness that deepens flavour, is now valued.

This paper is a development from research gathered for my book *The Story of Garum*¹. In this work I attempted to combine the archaeological, historical, and epigraphic data, in order to understand the wider trade in fish sauce and engage with amphora and fish bone specialists who needed a holistic picture of that trade. My main focus was the nature of these sauces and how they inhabited the *cetariae* – processing tanks – and the amphorae. The complexity of that picture is difficult to untangle and has led to much confusion and debate as to the nature of the various ancient fish sauces and how to distinguish the various products by their Latin names and how to attribute those names to the archaeological residues of fish sauce in amphorae and shipwrecks.

In the process of researching the book it became clear that over the period of about a thousand years – i.e. 500 BCE to 500 CE – these sauces appear to have evolved at key periods, changing character and usage, and it has been very difficult to pin them down. Robert Curtis memorably said that it was like pinning jelly to the wall (pers. com.). The sauces under discussion are *garum*, *liquamen*, and *muria* and *allec*. The key period of interest to me for the book was the late Republic and early empire, where the archaeology, epigraphy and elite perspectives from satire are extensive, and they allowed the possibility of pinning down and clarifying what these terms referred to in this period. Using the evidence chronologically and ensuring that the later confusion in terminology does not affect the earlier period led to some clarity. I acknowledge there are always going to be conflicting views².

It is in the late Roman and early Byzantine periods that the sources begin to present evidence suggesting that the consumer perceived these culinary products differently, and that in some instances production methods had changed. These changes are often cited when the late republican and early empire evidence is discussed. However, while it might be tempting to use later evidence to fill in the gaps

¹ S. GRAINGER, *The Story of Garum. Fermented Fish Sauce and Salted Fish in the Ancient World*, Abingdon 2021.

² *Ibidem*. I began this study by disagreeing with Curtis and his definition of the various sauces (R.I. CURTIS, *Garum and Salsamenta. Production and Commerce in Materia Medica*, Leiden 1991 [= SAM, 3]). Many scholars still rely on Curtis' original ideas. Essentially, he understood the umami imparting sauce of the ancients as a single entity with a constantly changing name, so that it was *garos/garum* in the early empire and *muria/liquamen* in the late empire but he failed to address the reason for constant name change. Archaeologists largely hold on to this idea: see, for example, Á. RODRÍGUEZ-ALCÁNTARA, A.M. ROLDÁN-GÓMEZ, D. BERNAL CASASOLA, E. GARCÍA-VARGAS, V.M. PALACIOS-MACÍAS, *New Technological Contributions to Roman Garum Elaboration from Chemical Analysis of Archaeological Fish Remains from the 'Garum Shop' at Pompeii (I. 12.8)*, "Zephyrus" 82, 2018, p. 149–163.

in our knowledge, it would be anachronistic to allow these changes to influence our understanding of the sauces in the earlier period. In what follows I shall trace the chronology of *garum* from early classical Greek sources to the early Byzantine period, highlighting the changes in the nature and the terminology utilised. This chronological approach has in fact led to an understanding that the main driver for change was the presence and absence of blood and viscera in the sauces. I will then discuss the implications and the possible reason for this phenomenon.

Garum: Chronology

It has been noted by Wilkins that the incidence of references to *garos* in Greek sources in any era is remarkably scarce and despite its apparent popularity in the Rome of Athenaeus (early 2nd Century CE), it is not found in the contemporary material within this text³. References to *garos* are in fact found in the numerous quotations that Athenaeus takes from his sources, namely Old, Middle and New Comedy from Athens in the 5th–3rd centuries BCE. *Garum* also does not figure at all in the mid. 4th century BCE culinary poem by Archestratus, which is remarkably odd given that this writer has fish as his main theme.

When the term γάρρος appears for the first time in Greek drama from the 5th Century BCE, its meaning is somewhat obscure, and is much later that we begin to understand it as a liquor derived from salted and dissolved fish. Pliny the Elder suggests that it originally referred to a species of small fish that the Greeks subsequently made their sauces from, but this species is unknown today⁴. Pliny also tells us⁵ that in ancient Greek the small fry species such as juvenile anchovy and sprat were collectively known as ἀφύη (*aphuee*), and that this term came from the idea of their similarity to raindrops (Greek ἀφρος, *aphros*, means ‘rain’), while the mature anchovy, μεμβραφύα (*membraphua*) is one of the most common fish sauce species in later residue evidence. At some point in modern Greek the anchovy became known as γάρρος clearly suggesting a linguistical link between the ancient and modern species of anchovy and the sauce known as *garos*.

Our Greek sources for *garos* are all gathered together in one section of Athenaeus. The earliest is a 5th BCE satyr play by Sophocles called *Triptolemus*⁶:

οὐδ<έν> ἢ τάλαινα δοῦσα τοῦ ταριχηροῦ γάρου

³ J. WILKINS, *Fish as a Source of Food in Antiquity*, [in:] *Ancient Fishing and Fish Processing in the Black Sea Region*, ed. T. BEKKER-NIELSEN, Aarhus 2005, p. 28.

⁴ PLINY THE ELDER, *Natural History*, XXXI, 93, 1, trans. H. RACKHAM, Cambridge, Mass. 1938 [= LCL, 330] (cetera: PLINY THE ELDER).

⁵ PLINY THE ELDER, XXXI, 95, 10.

⁶ ATHENAEUS, II, 67c. Fragment 606 of Sophocles, from the play *Triptolemus*, is only quoted in part in Athenaeus. See ATHENAEUS, *The Learned Banqueters*, vol. I–VII, ed. et trans. S.D. OLSON, Cambridge, Mass. 2007 [= LCL, 204] (cetera: ATHENAEUS); SOPHOCLES, *Fragments*, ed. et trans. H. LLOYD-JONES, Cambridge, Mass. 1996 [= LCL, 483] (cetera: SOPHOCLES).

There is no context for this intriguing line concerning a ‘wretched woman’ (τάλαινα) who had not given any pickled *garos*. τάριχος just means preserved or pickled fish, the implication being that *garos* was made in the process of preserving the fish. This may be a reference to the whole fish or a sauce, it is not clear. The term τάλαινα has an association with poverty and misery but also has a connotation with annoying or mean spirited⁷. A fragment from the satyr play *Proteus* by Aeschylus refers to τὸν ἰχθύων γάρων, ‘and the fish *garos*’⁸. There is no real sense of this product be a sauce as yet, though commentators have assumed that the term already refers to the fully-formed and elite form of *garum* made with mackerel and their intestines from the height of the Roman period⁹.

References in 5th-century BCE Old Comedy are equally ambiguous. We have an unknown play by Pherecrates, which suggests that someone could get their beard dirty with *garos*¹⁰. *Garos* in later Roman sources is a crystal clear, limpid liquid, but one might think that a product that was thicker, more like a paste and somewhat more clinging, would be more visible on a beard. Does this mean that this early *garos* had become a semi-processed paste? A fragment from Cratinus, a 5th-century BCE comic writer contemporary with Aristophanes, is intriguing as it says *your basket will be full of ‘garos’*¹¹. The basket (τάλαρος) is associated with cheese making and was surely full of holes, in which case we are entitled to wonder how such a basket could be full of a liquid or even a sauce with a paste-like consistency. A comic fragment from Plato, *they are going to choke me to death by dipping me in rotten ‘garos’* (ἐν σαπρῶ γάρῳ), implies for the first time that this *garos* was being fermented and a semi-liquid or mashed fish product and being made locally in quite large amounts, given that the vessel was, in principle, large enough to allow a person to drown within it¹². The use of σαπρός (‘rotten,’ ‘putrid’) is typical from later sources and tells us that this product right from the beginning was viewed with distaste, but it also implies, I think, that it was a poverty food¹³.

⁷ In *The Story of Garum...*, p. 44, I took this line to be a reference to poverty food, but given that the context is entirely absent, it is perfectly possible to see the satyr play as providing a more socially diverse context for the encounter. The women may either have had *garos* and refused to give it hence she is ‘wretched’ for refusing or she was so wretched she didn’t even have *garos* hence a potential association with poverty foods.

⁸ ATHENAEUS, XI, 67c (AESCHYLUS, frag. 211).

⁹ SOPHOCLES, p. 305.

¹⁰ ATHENAEUS, XI, 67c, frag. 188.

¹¹ ATHENAEUS, XI, 67c, frag. 312.

¹² ATHENAEUS, XI, 67c, frag. 215.

¹³ *Garos* does not appear to be particularly desirable. Fishermen seem to make it from their haul of the tiniest fish, which are always viewed as low status in ancient texts. We have reference to fishermen being condemned for taking fish too small, i.e., not letting them come to full size, in a play by Alexis (*Odysseus Weaving*, frag. 159; ATHENAEUS, frag. 303a), and this may be connected to the fact that fishermen were largely poor men who were exploited by the middle men selling fresh fish in the markets and were reduced to making this kind of *opson* with the tiniest fish for themselves (see

A reference to *garos* in the letters of Alciphron, written in the 2nd century CE but potentially using extant New Comedy plays from the 3rd centuries BCE, makes the suggestion that fishermen made *garos*, by boiling the little fish. A fisherman called Sosias is known for *boiling that tasty and useful 'garos' from the tiniest fish that he catches in his net*¹⁴. It is quite possible, therefore, that some of the earliest *garos* was cooked rather than fermented, that is, made quickly with the simplest of technology. It is not clear to what extent the 'tasty and useful' epithet can be applied to the 3rd century BCE *garos*. The idea of its general culinary utility may have been a concept from Alciphron's era.

Alongside these obscure references to *garos* from a lower-class social milieu, we find from similar sources that the elite are consuming something different, a salted fish brine associated with the trade in a cleaned salted fish from the Black sea and Spain and which seemed to be much more popular and desirable in the elite culinary world of Athens in the 4th and 3rd centuries. This is a brine known as ἄλμη (*halmē*) and ἄλμυρίς meaning 'saltiness', from which the Latin term *muria* was derived. Archestratus suggests that tuna steaks should be served hot from the coals, dipping them in pungent brine¹⁵. There are also references from drama in Athenaeus to what was called 'Thasian *halmē*', which we can assume was a pickled fish brine from the island of Thasos. Thasian brine is sharp, a term associated with *muria* in later Roman sources, and yet it could also be used as a cooking medium to stew fish¹⁶. In an Aristophanes fragment we see that this kind of fish

D. MYLONA, *Fish-Eating in Greece from the Fifth Century B.C. to the Seventh Century A.D. A Story of Impoverished Fishermen or Luxurious Fish Banquets?*, Oxford 2008 [= BAR, 1754], p. 67–74).

¹⁴ ALCIPHRON, 18.2. The letters of Alciphron are responsible for a style of literary imitation known as the 'second sophistic'. These 2nd century CE writers composed literature in imitation of the Attic comedy world of 4th century BCE Athens. Alciphron's fictional letters are written between stock comedy characters such as farmers, fishermen, courtesans and parasites: *We are dealing with a kind of literature that is based on literature* (Benner and Fobes 1959: 6). It is clear that many now-lost Middle and New comedies were almost certainly extant and available when Alciphron composed his letters, and it can also be demonstrated that some passages were lifted verbatim or were simply rewrites of portions of the lost plays (Benner and Fobes 1959: 12). ALCIPHON, AELIAN, PHILOSTRATUS, *The Letters*, ed. et trans. A.R. BENNER, F.H. FOBES, Cambridge, Mass. 1959 [= LCL, 383]. For a more recent treatment of the issue see M. BIRAUD, A. ZUCKER, *The Letters of Alciphron. A Unified Literary Work?*, Leiden 2019 [= Mn.S, 424].

¹⁵ ARCHESTRATOS, frag. 37, [in:] *Archestratos of Gela. Greek Culture and Cuisine in the Fourth Century BCE*, text, trans. et comm. S.D. OLSON, A. SENS, Oxford 2000; ATHENAEUS, 303e.

¹⁶ ATHENAEUS, 164e, 306b. We cannot know what species these brines were derived from; later sources are dominated by the trade in mackerel and tuna, though smaller species such as anchovy and sardine are possible. A fragment from Aristophanes refers to the *unfortunate one who was first to be immersed in pilchard-brine* (*Merchantships*, frag. 426, ἐν ἄλμῃ τριχίδων; ATHENAEUS, 329b), which may be a brine made from small, particularly bony, insignificant anchovy, τριχίδιον, and therefore of less value than one of tuna and mackerel. Wilkins suggests that all the salted fish dishes that Archestratus praises were part of a luxury cuisine, and that the only fish that the ordinary people of Greece could access were the small-fry, which were eaten rotten, either dried or salted down into

sauce was mixed into dressings. The chorus recites a list of repetitive physical activities that happen in the kitchen, fanning the fire, kneading bread and beating the *Θασιαν λιπαράμπυκα*; this is obscure but may reflect a Thasian (brine) with an oily headdress, i.e. a layer of oil. This certainly implies that the oil and brine was beaten together¹⁷. Saltfish brine was also served with oil; fragments from a comedy by Sotades, ‘Captive Women’, has a slave serve red mullet *ἄλμη τε λιπαρᾶ*, ‘with brine and oil’, ‘placed beside the fish’¹⁸.

A late 4th century comedy by Archedicus, *The Treasure*, has a cook who stews his fish and serves it with a *perfect brine sauce which any free man could dip his food into*¹⁹. This has a hint of exclusivity: only free men of status dip their food in brine. Is this in contrast to that ‘other’ sauce, so little mentioned in our sources, that poorer people dipped their food into, i.e., *garos* and its fish-paste residue? In 4th and 3rd century BCE Athens, this salt fish brine seems to have had a culinary cultural value among elite diners which is absent from references to *garos*. At some point we have to imagine that this embryonic *garos* changed from a thicker fish-paste product, eaten as an *opson* or relish by ordinary people, into a crystal-clear, amber-coloured sauce utilised in sauces and in the kitchen as a seasoning ingredient, one utilised in high-end cuisine rather than amongst fishermen and peasants. One suspects it did not become more widely used in Greek cooking until it had become more appealing and desirable. A clear salt-fish brine is fundamentally different from this early idea of *garos*, as the salting process is clean and devoid of the digestive enzymes that are present in the viscera. Fish viscera are fundamentally repugnant to mankind, but it is only when this material is retained that the transformation takes place whereby solid protein is converted into a liquid form. Fish brine was potentially less nutritious, which in turn may give it a less umami rich taste, certainly in relation to *garos*, but this lighter taste may have been desirable. A brine derived from freshly salted tuna has a delicate flavour, quite appealing in fact, but

garos (J. WILKINS, *Cooking and Processing Fish in Antiquity: Questions of Taste and Texture*, JMarA 13.3, 2018, p. 231). I am sceptical of such a polarised view. There is a tendency to assume any food item mentioned in elite texts is automatically inaccessible to the poor majority without evidence to the contrary. These dried salted fish from the Black Sea made with small species such as anchovy, sprat and horse mackerel were called *saperdês* and were traded in baskets called *sarganê* (ARCHESTRATUS, frag. 39, 3–4; S.D. OLSON, A. SENS, *Archestratos of Gela...*, p. 165. See also E. LITTLE, *The Economics of Saltfish Production in the Aegean During the Classical and Hellenistic Periods*, JMarA 13.3, 2018, p. 407–418, at p. 410).

¹⁷ ARISTOPHANES, *Acharnians*, 671, [in:] ARISTOPHANES, *Acharnians. Knights*, ed. et trans. J. HENDERSON, Cambridge, Mass. 1998 [= LCL, 178]. It is not immediately clear what is happening: we have a Thasian brine which is oily from the *λιπα*. An *ἄμπυξ* is a lady’s headdress, so an oily band of oil on the surface would seem to be the best guess. The ‘activity’ is the beating of the mixture to create an emulsion. One immediately thinks of a vinaigrette. This is very reminiscent of the later use of *garos* to make *oenogarum* sauces blended to make a similar type of dip. This implies that the very ideas of a blend of oil and fish sauce was developed using fish brine not *garos*.

¹⁸ ATHENAEUS, 293c.

¹⁹ ATHENAEUS, 292f.

with none of the umami of *garos*. One can quite easily imagine someone attempting to unite the clean, crystal-clear image of a salt-fish brine with the umami rich taste, but negative image of *garos* in a new processing technique that removed the fish paste and the bones and made a rich darker liquid that had the potential to transform everyday food. We can see a different and possibly new image of *garos* as a useful seasoning in the story in Athenaeus reported by Clearchus about Philoxenus, a 4th century food writer who...

...in his native city (Leucus) and elsewhere, would bathe and then go round from one house to the next with his slaves following him carrying oil, wine, *garos*, vinegar and other seasonings. Then he would go into other people's houses, season whatever was being cooked for everyone, adding what was needed²⁰.

Garos here has become a regular and useful liquid, 'tasty and useful' as Alciphron claims later, to season all manner of foods in the kitchen and this is how we find *garos* being used in the later Hellenistic and Roman periods. The techniques that we have seen whereby fish brine and oil were blended to make dipping sauces were subsequently transferred to this new form of *garos*, and as a result the concept of an *oenogarum* was born.

Greek literary and archaeological evidence for the fish sauce trade and its utilization in Hellenistic food during the 3rd and 2nd centuries BCE is very scarce. There is an absence of evidence to suggest that fish sauce of the *garos* type was widely traded in a systematic way within Greece or from Greece to the wider Mediterranean. This is not the case with salted fish however, as a trade in tuna and mackerel from Spain is well documented²¹. One can only surmise that it was made in a small scale and local fashion which is difficult to see in the archaeology. There has also been a long-standing assumption within archaeology that *garos/garum* was made in bulk and traded into the Mediterranean as early as the Punic fish salting industry alongside *salsamenta* from the 4th century BCE, but this is not in fact well documented archaeologically²². Crucially there does not appear to be a demand for a widely traded bulk *garos* fish sauce in Italy, and it is likely that until its use had spread down through the social classes, a bulk industry was not viable. As we will see, the first evidence of a *garos* fish sauce in Roman cuisine is undoubtedly

²⁰ ATHENAEUS, 6a.

²¹ S. GRAINGER, *Story of Garum...*, p. 56.

²² The structures and amphorae that are later associated with the bulk fish sauce trade are missing in the archaeology. Fish sauce was either made in small-scale way around the Mediterranean, in *dolia*, a method of production which is difficult to identify archaeologically, or the structures have not emerged yet. See S. GRAINGER, *Story of Garum...*, p. 51–62. But other views prevail in archaeology. See P.A. CORRALES, J.M.C. PRIETO, M.C. AGUILAR, J.S. PADILLA, *Salsamenta malacitano: avances de un proyecto de investigación. Itálica*, RACA 1, 2011, p. 29–50 and D. BERNAL CASASOLA, A. ARÉVALO, L. LORENZO, L. AGUILERA, *Imitations of Italic Amphorae for Fish Sauce in Baetica. New evidence from the salt-fish factory of Baelo Claudia (Hispania)*, RCRFA 38, 2003, p. 305–313.

elite, and there is even a suggestion that the use of *garos* was condemned as un-Roman and decadent, a reflection of undesirable Hellenistic practices which the majority of traditional Romans rejected. After the 2nd Punic war, we begin to see fish sauces in Italy from the plays of Plautus (fl. 210 – 180 BCE), albeit obliquely, in that the residue of *garos* (i.e. *allec*, the fish paste) was at least familiar to his audience²³. The paste is consumed as a *pulmentaria* or dip for ham, and also vegetables. The term *garos* or *garum* does not appear in the plays, though we can be fairly certain that *garos* would have been simply transliterated into *garum* at this time. Given that there is always great difficulty in distinguishing between what was the Greek and Roman social behaviours within the plays of Plautus, it not clear that *garos* itself was consumed widely among the sub-elites and hangers-on that peopled his plays in the early 2nd century BCE. It may have been an elite and Hellenistic foodstuff that the Roman audience would have laughed at, as ‘foreign’ food often has been. Cato the Elder, writing his agricultural manual in c. 150 BCE, makes no reference to *garos* either, but does give his slaves a ration of fish paste (*allec*) when the figs have run out, suggesting that such an item was available, though whether this was because the sauce and its residue was widely available to buy in local markets or because small quantities of a fish sauce paste were made for the use of the estate is not clear²⁴.

The Hellenization of food in the Roman Republican era is actually difficult to see, and there are many gaps in our knowledge in relation to when and how fish sauce was introduced into the Roman diet and how it was perceived by the various social groups in this early period of Rome’s gastronomic education. We are informed that the Roman elite appears to have fallen under the spell of Greek gastronomy in the mid-2nd century BC and particularly with the conquest of Corinth in 146 BCE. Prior to this ‘fall’ the Romans considered themselves to be unspoilt

²³ In Plautus’ plays, *allec* seems to be a commonplace commodity: a fragment from *Aulularia* has the line *those who offer me raw vegetables should add ‘allec’* (frag. V *Aulularia*, [in:] PLAUTUS, *Amphitryon. The Comedy of Asses. The Pot of Gold. The Two Bacchises. The Captives*, ed. et trans. W. DE MELO, Cambridge, Mass. 2011 [= LCL, 60]). In the play *Persa*, which is peopled by characters from the world of slaves, prostitutes and unlucky parasites, *allec* is a suitable accompaniment to reheated ham (*Persa*, I, III, 107, [in:] PLAUTUS, *The Merchant. The Braggart Soldier. The Ghost. The Persian*, ed. et trans. W. DE MELO, Cambridge, Mass. 2011 [= LCL, 163]). The parasite is offered reheated leftovers, and shows a hint of disappointment when he says *Ecquid hallecis? Is there any ‘allec’?* The fact that the parasite asks for *allec* indicates that this combination, meat with a strongly flavoured relish, was a recognisable everyday combination. He is expressing some distain for the plain leftovers, particularly as the slave indicates that other meats are being freshly cooked indoors which are clearly not being offered to the parasite. Two hundred years later, Martial can suggest that a poor miserly man who rejects luxury fare in public is apparently satisfied in private with ‘capers and onions floating in putrid allec and allec with a dubious ham’ (MARTIAL, III, 77, 5). We may be dealing with a literary trope garnered from Plautus, or this may simply reflect what modest men could get to eat.

²⁴ CATO, VARRO, *On Agriculture*, trans. W.D. HOOPER, H.B. ASH, Cambridge, Mass. 1934 [= LCL, 283]; CATO, *DA*, 58.

‘porridge-eating barbarians’ with simple tastes according to Plautus²⁵. Only later writers suggest what attitudes to it in the Republic might have been, as for instance in a little-known reference to *garos* in Pliny the Elder. When talking of the consumption of *caules*, spring cabbage shoots, Pliny says:

Nor did the people approve very highly of *caules* as they do now, (mid-1st century AD) since they (looking back at the Republic) condemned a *pulmentaria* (relish = that which is eaten with bread) which needed other *pulmentaria* to get them down. That meant sparing the oil for the desire for *garum* was a matter of disapproval²⁶.

These lines need unpicking carefully. *Caules* refers to a form of spring cabbage that need cooking, and it seems it needed a sauce too, which the Republicans saw as an extravagant Hellenism. To have a sauce required not only oil but *garum*. Pliny appears to be saying that he believes the early use of *garum*, and in fact the use of *oenogara* dressings, was frowned on as extravagant, and a culinary idea from *Magna Graecia* that the Romans further north collectively disapproved of because it was foreign. It is difficult to say to what extent this passage is indicative of a widespread lack of ‘sauces’ and *garum* in the Roman diet. Nevertheless, in step with other phenomena of cultural assimilation, the increasing use of fish sauce was almost certainly infiltrating Roman society but from the top down. Clearly, *garum* became immensely popular over time, but from this we might conclude it took time to be accepted and that the trade in fish sauce was slow to develop in Italy.

During the first century BCE, gastronomy took off in Rome. Cooks became *de rigueur* in the households of the powerful, and feasting in style became a necessity in the political climate of the time. This new atmosphere was particularly conducive to an emerging group of gourmets: men competed over the size and variety of fish they could breed, over knowledge of the food itself and how it was prepared, and over the size and number of dining-rooms they could use. Some who were unable to control their appetites were publicly condemned and often satirized, and it is within this milieu that we first hear about fish sauce in a distinct Roman cuisine.

The first indication of any kind of Roman elite interest in fish sauce comes quite late in 35–33 BC, and the first recorded use of *garos*, rendered as *garum* in a Horace satire. The passage ridicules the idea of an elite gourmand who has become a bore about the food he serves to his guests. The host, Nasidienus, describes at great length the dish of eel and the sauce served with it, which as we discover later is an *oenogarum*, a blended sauce made with oil, wine, vinegar, spices and *garo de sucis*

²⁵ PLAUTUS, *Mostellaria*, 828, [in:] PLAUTUS, *The Merchant...*; See also M. LEIGH, *Food in Latin Literature*, [in:] *A Companion to Food in the Ancient World*, ed. J. WILKINS, R. NADEAU, Hoboken 2015, p. 48; E. GOWERS, *The Loaded Table. Representations of Food in Roman Literature*, Oxford 1993, p. 53.

²⁶ PLINY THE ELDER, XIX, 58, 1.

piscis Hiberii, ‘garum from the juices of a Spanish fish’²⁷. This dressing of fish sauce with spices and other liquids will appear ubiquitous in later sources, a standard accompaniment to all manner of vegetables and meats and across the entire social classes in Rome. At the time of writing, it certainly appears sophisticated, but was also probably a quite well-established culinary practice to serve these blended sauces either with expensive valued fish sauces, wines and oils, or, among the less affluent, with the cheap and basic varieties of these same liquids. Ultimately from *Apicius* and the *Colloquia of the Hermeneumata*, Latin and Greek phrase-books, we see that these *oenogara* rapidly became commonplace²⁸. The fish sauce cited here as *garum* was undoubtedly a Spanish whole-mackerel fish sauce of Greek origin, i.e. *garos* – transliterated into *garum* – and subsequently renamed *liquamen*, which we later learn represented the best quality of this type of fish sauce²⁹.

Nasadienus also serves *allec* blended with the lees from Coan wine as an appetiser. We may also conjecture that this *allec* would have been a mackerel *allec* derived from the mackerel *garos* and of a much higher quality than the *allec* made from smaller species, likely given to slaves at Cato’s farm³⁰. Elsewhere in Horace’s *Satires* a gourmet-philosopher recounts the precepts of fine living to a passer-by in the form of philosophical lesson. The details are trivial nonsense about what constitutes fine cuisine, including another indication that wine lees and *allec* were blended and served at Roman dinners. He also tells us more about these vinaigrette-like sauces:

It is worth the effort to get to know thoroughly the nature of the double sauce. Simple sauce is made from sweet olive oil, which is worthy of being blended with fragrant pure wine and *muria*, provided that it comes with a powerful whiff from a Byzantine jar³¹.

²⁷ HORACE, S. II, 8, 42sq. [in:] HORACE, *Satires. Epistles. The Art of Poetry*, trans. H. RUSHTON FAIRCLOUGH, Cambridge, Mass. 1926 [= LCL, 194] (cetera: HORACE).

²⁸ These phrase books cannot be dated with more precision than to the 2nd–4th centuries CE. They consistently translate *liquamen* for *garos* and bend with oil or vinegar. See *Colloquium Monacensia-Einsidlensia*, 9d, [in:] *The Colloquia of the Hermeneumata Pseudodositheana*, ed. et trans. E. DICKEY, Cambridge 2012 [= CCTC, 53] (cetera: *Colloquium Monacensia-Einsidlensia*).

²⁹ I have in the past assumed that these Spanish mackerel ‘juices’ were blood and viscera and that this was therefore a very early reference to a blood viscera *garum*, but now I think that this is an error. J.M. LEON, *A propósito de la marca Soc y en torno al Garum Sociorum*, *Habis* 32, 2001, p. 171–184 at p. 175) has suggested that we should expect *sociorum* indicative of elite *garum* here, but clearly this special black *garum* had not yet been invented. See below.

³⁰ HORACE, S. II, 8, 2–9. There is considerable confusion as to the nature of *allec*. How could a product that was fed to slaves in 150 BCE and perceived as a *faex*, a waste material or residue and at best a fish paste with the bones still in it, also be some things served at an elite banquet? For a discussion see S. GRAINGER, *Story of Garum...*, p. 206sq. 229sq.

³¹ HORACE, S. II, 4, 63–71.

The sauce is boiled with herbs and saffron and more oil is added. The identity of this *muria* is greatly disputed, for numerous, complicated reasons. For the present, it is sufficient to note that at this stage, this product can only be a Greek *halmē*, i.e. a salt fish brine which was part of the Hellenistic culinary practices that the Romans embraced³². Confirmation that this is a light delicate fish brine at this time comes from another description of *muria* from the same poem. The philosopher-gourmet suggests that the juices from a sea urchin have the essence of the sea about them and are superior to *muria*. Such an association clearly indicates that they are both light delicate fish brines rather than the intense umami hit of either *garum* or *liquamen*³³.

We now learn that at the close of 1st century BCE a new kind of *garum* was developed which appears to have been made solely with fish blood and viscera. Our first indication of this new sauce is an obscure reference in Pliny the Elder:

Marcus Apicius... thought it especially desirable for mullets to be killed in a *garum sociorum* (a *garum* of its companions/allies), *nam ea quoque res cognomen invenit* (for this thing also has procured a designation)³⁴.

This passage requires delicate unpicking, as it is the most important piece of evidence we have on the origin of this elite Roman sauce. When Pliny says that even ‘this thing’ has got a name, it surely cannot be the original Greek idea of a dissolved whole-fish *garos*, even if made with mullet, as this had been around in Rome for decades and centuries as a Greek sauce. The sauce in question must refer to something new that was being used to flavour the mullet dish³⁵.

³² Later references have been read to indicate that a *muria* could also be a *garum sociorum* and even a *garos/liquamen* but they are dated to the period after Martial speaks about fish sauces in c. 90 CE. See below. There are numerous other views which continue to maintain that *muria* should be identified with *garum*. I disagree. See for instance J. STUDER, *Roman Fish Sauce in Petra, Jordan*, [in:] *Fish Exploitation in the Past. Proceedings of the 7th Meeting of the ICAZ Fish Remains Working Group*, ed. W. VAN NEER, Tervuren 1994 [= AMRAC.SZ, 274], p. 191–196; R.I. CURTIS, *Garum...*, p. 7–8; T.H. CORCORAN, *Roman Fish Sauces*, CJ 58, 1962, p. 204–210 at p. 205; Á. RODRÍGUEZ-ALCÁNTARA, A.M. ROLDÁN-GÓMEZ, D. BERNAL CASASOLA, E. GARCÍA-VARGAS, V.M. PALACIOS-MACÍAS, *New Technological Contributions...*, p. 150.

³³ On *muria*, see HORACE, S. II, 4, 63–71.

³⁴ PLINY THE ELDER, IX, 66, 4. The *sociorum*, allies or friends and companions, have previously been associated with the trading allies, i.e. the trade guilds processing fish for Rome from Spain, but this is no longer credible. The ‘companions’ are simply more of the same fish.

³⁵ The background to this gourmet behaviour sheds more light on Pliny’s remark: Seneca provides a description of mullet being cooked/asphyxiated in front of the guests; he writes that they are in a glass vessel and change colour as they do so, for the guest’s entertainment. He then says *alios necant in garo et condiunt vivos, they kill others (mullet) in garum, and season them while alive* (QN, III, 17, 2, 9). This process is also described in the feast of Trimalchio (*Satyricon*, 6.3.2). A little later Seneca remarks *How inconceivable it would sound to them to hear that a fish swam in ‘garum’ and was killed during dinner* (QN, III, 17, 3, 4).

It is not till Martial's *Xenia* gift poems (ff 86 – 103 CE) that we get a clear confirmation that a *garum sociorum* was a sauce made entirely from fish blood and viscera, and in this poem, it is mackerel³⁶. This process is further illustrated by a descriptions in Manilius' *Astronomica* of fish being drained of their precious fluids to make sauces³⁷. *Garum sociorum* is later associated with a *garos haimation* (bloody) in the *Geoponica* and also described as black (*melan*) by Galen³⁸. In Egyptian papyri *garos* fish sauce was described as *leukos*, light and bright, in contrast to a dark and black variety³⁹. It is apparent from these details that in the 1st Century CE there were three types of sauce and that they were distinguishable by colour: pale amber *muria salsamenta*, i.e. fish brine; a pale light amber liquor that was a small/medium-whole-fish *liquamen*; and black/red blood-viscera *garum*⁴⁰.

Crucially this new bloody sauce had a limited appeal and was not utilised in the cooking of Roman food, but there are clear indications that *garum sociorum* was a table condiment⁴¹. It took time to be incorporated into the didactic culinary sources, and in fact it was not often acknowledged as a separate entity, so that it is difficult to see the distinction between the sauces in texts. When the term *garum* is used in early material, recipes, remedies, satires etc. we must assume that the essential substance, the original small/medium-whole-fish sauce, is intended, and it is only when an additional adjective is used such as *sociorum*, and also later terms like *melan* (black) and *haimation* (bloody), or when such terms as *nobile* and *arcano* are used in Martial, that it actually corresponds to the new blood-viscera sauce. However, it is still unfortunately frequently very unclear which variety of sauce was being referred to when the terms occur in didactic texts⁴².

³⁶ MARTIAL, XIII, 102: *Garum sociorum Expirantis adhuc scombri de sanguine primo accipe fastosum munera cara, garum, garum sociorum: receive lordly garum an expensive present made from the blood of a still breathing mackerel*. Confirmation of the use of blood and viscera alone is from the *Geoponica* recipe, 46.6: *A rather high quality 'garos', called haimation, is made thus. Take tunny entrails with the gills, fluid and blood, sprinkle with sufficient salt, leave in a vessel for two months at the most; then pierce the jar, and the 'garos' called 'haimation' flows out*. A. DALBY, *Geoponica: Farm Work. A Modern Translation of the Roman and Byzantine Farming Handbook*, Totnes 2011. The viscera are added first in the *Geoponica* recipe, which has led to some to conflate this recipe with the description in PLINY THE ELDER, XXXI, 93, 1, where he suggests that viscera alone (no blood) is used. *There is yet another kind of choice liquor called 'garum', consisting of the viscera of fish and other things that would normally be thrown away, soaked with salt so the 'garum' is really a putrid exudation*.

³⁷ MANILIUS, *Astronomica*, V, 669, ed. et trans. G.P. GOOLD, Cambridge, Mass. 1977 [= LCL, 469]; for detailed discussion, see S. GRAINGER, *Story of Garum...*, p. 35.

³⁸ GALEN, *De compositione medicamentorum secundum locos*, 12.637, [in:] *Claudii Galeni opera omnia*, ed. C.G. KÜHN, Hildesheim 1965 (repr. of 1823 ed. G. OLMS).

³⁹ S. GRAINGER, *Story of Garum...*, p. 95. P Herm. Rees 23.6. 4th century CE.

⁴⁰ MARTIAL, XIII, 103, *Amphora muria: e Antipolitani, fateor, sum filia thynni: essem si scombri, non tibi missa forem, An amphora of 'muria': I am the daughter, I admit, of tuna from Antibes; had I been of mackerel, I should not have been sent to you*. The implication is that mackerel *muria* was perceived as superior to that made from tuna.

⁴¹ S. GRAINGER, *Story of Garum...*, p. 81.

⁴² MARTIAL, VII, 22, *arcano garo*, 'arcané', 'mysterious and sacred' *garum*. The gift of oysters from the *Xenia*, XIII, 82, includes a further reference: *Ostrea: a shellfish, I have arrived drunk from Baian*

We lack a point of departure for the introduction of the new term *liquamen*; It appears on amphorae from the early 1st century CE, while its appearance in texts, other than *Apicius*, is relatively late and contemporary with Palladius in the 4th century CE⁴³. The individual recipes preserved in the text that is entitled *Apicius* (the title *De re coquinaria* is a medieval addition) were undoubtedly written over many years by numerous slave cooks, rather than in a single publishing event by a literary gourmet of the same name⁴⁴. These cooks use *liquamen* as the fish sauce seasoning of choice with some very rare exceptions⁴⁵. The compilation of *Apicius* is undoubtedly late in date, but the recipes are more difficult to pin down, and many display characteristics suggesting an early Greek origin⁴⁶. The word *liquamen* was derived from *liquefcere*, to liquify, and entirely apposite given that the process is one in which fish fully dissolve into a liquid. In order to explain the need for a new term at this time I have conjectured that the gourmet community appropriated the term *garum* for the new black and bloody sauce and the fish processing industry had no choice but acquiesce and a new term therefore had to be coined by the manufacturers to refer to the original Greek type of *garos* in order to prevent chaos in the industry. There is admittedly very little direct evidence that this was the motivation for the new term, but nevertheless there is no doubt that henceforward *liquamen* became the generic term for *garos*, the original sauce of Greek origin⁴⁷.

Lucrine, now in my extravagance I thirst for 'nobile garum'. For a wider discussion on the development of the black bloody *garum* see S. GRAINGER, *Story of Garum...*, p. 65sq.

⁴³ See PALLADIUS, *Opus Agriculturae. The Work of Farming*, III, 25, 12, trans. J.G. FITCH, Totnes 2013 (cetera: PALLADIUS), where he uses the word *liquamen* to refer to a fermented salty liquid derived from pears, implying that the term had that generic function at this time. Other undated sources such as the *Colloquia of the Hermeneumata* (2nd–4th centuries) use *liquamen* to translate *garos* (ed. E. DICKEY, vol. I, p. 119, *Colloquium Monacensia-Einsidlensia*, 9d).

⁴⁴ Research into *Apicius* manuscript tradition seems to agree that the title *De re coquinaria* refers more precisely to the Renaissance tradition of copying and reading *Apicius* (cf. M.E. MILLHAM, *Toward a Stemma and Fortuna of Apicius*, IMU 10, 1967, p. 263).

⁴⁵ This is largely because *garos/liquamen* was always an ingredient used in the kitchen, whereas the blood *garum* and *muria* were more visible table condiments. *Garum per se* is hardly to be found in *Apicius*. S. GRAINGER, *Story of Garum...*, p. 81.

⁴⁶ Greek is retained for the chapter titles. There are numerous recipes that retain Greek technical terminology, and some recipes contain dating information placing their original composition in the 1st century CE. Two recipes require that the cook uses either silphium from Cyrenaica or Parthia (I, 30; VII, 1, 1). As we are informed by Pliny that the Cyrenaican silphium was extinct by c. 50 CE one must conclude that this recipe was composed while it was still available. PLINY THE ELDER, XIX, 35–38; XXII, 100–106. See *Apicius. A Critical Edition with Introduction and English Translation*, C. GROCOCK, S. GRAINGER, Totnes 2006 (2nd ed. 2020), p. 13–72.

⁴⁷ Where Greek sources use *garos*, Latin invariably translate this as *liquamen*. See Diocletian's price edict, III, 6–7: Γαρου Γευματος πρωτιου, *Garos food supplies of first quality*; γαρου δευτερου Γευματος, *garos second quality food supply*. In the Latin this is rendered as 'first quality liquamen' and 'second quality liquamen'. *Diokletians Prisedikt*, ed. S. LAUFFER, Berlin 1971. The *Geoponica* translates *garos* as *liquamen* (A. DALBY, *Geoponika...*), as do the Hermeneumata phrase books (see *Colloquium Monacensia-Einsidlensia*, 9d).

Within the industry it is clear, from amphora labels, that the term *garum* was used specifically to refer to the new blood viscera sauce⁴⁸.

The subsequent vast industrial production and distribution process of all three sauces reflects a huge market for consumption in every area of the empire. The use and popularity of *garum/liquamen/muria* spreads to new generations of local 'Romans' in Northern Europe, Africa, and the East, initially spread by the armies. Amphora inscriptions found in Northern empire indicate that all three sauces were widely traded. The data from amphora inscriptions in terms of numbers of surviving names alone suggest that the bloody *garum* sauce was widely consumed and statistically vastly more popular than *liquamen*. I believe there is not enough attention given to the numbers of fish sauce amphora that remained unlabelled because they always carried *liquamen*. The perception is that the new *garum* dominated the trade, yet there are many reasons to doubt its dominance. Black *garum* was an acquired taste and was undoubtedly used in relatively small amounts in gourmet *oenogara* served to elites and sometimes poured onto cooked food at elite banquets, while *liquamen* was used in bulk during the cooking process in virtually every type of cooking, across every social class and over the huge geographical spread of the empire. It inevitably must have been the dominant product of trade and commerce, yet the blood *garum* and its negative image always retains its prominence in scholarly debate. The identification of *liquamen* with the original *garos* and a separate commodity from *garum* is simply not considered⁴⁹. This author has further challenged the received tradition on the prevalence of *garum* by proposing that amphorae were often initially used to carry high-end *garum* manufactured and labelled in Spain but then subsequently reused, with or without relabelling, many times to carry 2nd and 3rd extractions of *liquamen*. This proposal would vastly increase the volume of *liquamen* traded such that it would overtake the apparent statistical prominence of *garum* on amphora labels, many times over⁵⁰.

Muria, when it was a brine derived from *salsamenta* rather than simply salt and water, always retained its popularity and usefulness, and this is clear from Martial's *Xenia* gifts⁵¹. How its use differs from *liquamen* is not always clear. It does not appear in *Apicius* as a separate cooking sauce, and yet over time it does appear to have become much more prominent and at the same time its social status is downplayed, so that it seems cheaper and more commonplace. Our sources are

⁴⁸ S. GRAINGER, *Story of Garum...*, p. 253.

⁴⁹ Current thinking is that the term *garum* simply ceased to be used and *liquamen* replaced it. However, this is not accurate as *garum* was frequently used alongside *liquamen* in late Roman veterinary texts: *ibidem*, p. 13–43; R.I. CURTIS, *Garum...*, p. 8.

⁵⁰ S. GRAINGER, *Story of Garum...*, p. 207sq, 218. These extractions were generated from a traded *allec*, i.e., a semi-processed fish sauce. I am grateful to Susan Weingarten for new evidence that has emerged from Rabbinical sources which suggests that three extractions were taken from an amphora containing a rich and thick *allec*. See n. 60, below.

⁵¹ See n. 23, above.

unfortunately silent on these issues through the later 2nd and 3rd centuries BCE until we hear from Ausonius, whose letter written in c. 390 CE to a friend to thank him for a gift of *muria* brings this sauce back into focus. A full quote is necessary:

Paulinus my son, ...fearing that the oil you sent me had not pleased me, you repeated your gift and distinguished yourself more fully by adding a condiment (of *muria**) from Barcelona. But you know that I have neither the custom nor the ability to say the word *muria*, which is (or 'because it is') used by the common folk, although the most learned of our ancestors and those who shun Greek expressions do not have a Latin expression for the appellation garum. But I, by whatever name that liquor 'of our allies' (*sociorum* = bloody sauce) is called, "will now fill my patinas so that that juice, too sparingly used in our ancestors' tables, will flood the spoons".

This little letter throws up many complex questions which we cannot deal with fully. Why is the word *liquamen* ignored here when it is precisely what he seems to want, a genuine Latin term for fish sauce and one that was current. He claims not to want to use the term *muria* because it is a vulgar term in common usage, yet he has already done so. A way out of that is to see the first occurrence of *muria** as a gloss, as grammatically the 'condiment from Barcelona' is perfectly adequate, though it gets us no closer to a definitive answer. That he has received a black bloody *garum* seems fairly clear from his reference to *sociorum*, as is the idea that the sauce he has received and wants was poured at table by the consumer or slave onto a finished dish: in this case a *patina*: frittata. The question how to distinguish *muria* from *liquamen* in terms of usage and consumption practices is immensely difficult at this point. As we will shortly see in the wider empire, *muria*, i.e. a clean fish brine, will become the preferred form of fish sauce among certain communities, and this may be at least in part an explanation for the anomaly found in Ausonius' letter. He is reflecting with some irritation on a recognised confusion about the numerous names for the various types of fish sauce. His use of *muria* here may reflect a recognition that a fish brine was still in common usage and may have been utilised in the same way as *liquamen/garos*.

Discussion

Garos and *liquamen* were fundamentally dependant on the presence of indigenous and additional fish viscera. Viscera contain digestive enzymes which rapidly liquefies the fish muscle protein. The liquor generated in these circumstances would naturally be highly nutritious as they were both rich in protein and also polyunsaturated fatty acids. The fermenting process imparts *umami*, the 5th taste, alongside salt sweet sour and bitter and which is described as meaty deliciousness. This taste greatly increases the pleasure experienced by the consumer, whether it be in simple basic stews or more elite fare. That much is clear. It is not clear to what extent the viscera were essential to generating a sauce with the requisite desirable umami or,

alternatively, that the length of time for which the sauces were stored and matured could compensate for the absence of digestive enzymes. Does maturing time also compensate for the potential reduction in liquefied protein and therefore potential nutrition⁵²? Consumers may have been unable to tell the difference, which is the conclusion we might draw from the fact that a cleaned fish brine, i.e. *muria*, subsequently became equivalent to and used as *garos/garum/liquamen* in some regions.

In a description by Alfredo Carannante of the modern methods employed for making *colatura di alici* (the traditional fish sauce originally made in the village of Cetara, and the surrounding villages on the Amalfitan Coast, in the bay of Naples), we may see reflections of the production method employed in the past to make *muria*. The fish are eviscerated and beheaded, and salted overnight to draw out the blood. The liquid from this process is discarded and then the fish layered with more salt and compressed with weights. After four to six months of ageing, the *colatura* 'filterings' drip out, leaving the anchovy a compressed salted fish product. This was the product aimed at in the early history of *colatura* production, as Carannante says: *in the traditional process of storage of the anchovies (for consumption), that liquid was taken and eliminated*⁵³. However, it is the liquid 'filterings' which are the aim of the production of the *colatura* today. Carannante explains that some of the locals utilised the liquid as a seasoning, even though the principal purpose was to preserve the anchovy. Then in the early 1990s the local utilisation of the liquor became more widespread, and its reputation and value among foodies spread outside Italy. Some of the manufacturers made the decision

⁵² There is a huge range in the protein levels of high-quality modern fish sauces today. In South East Asia personal taste dictates that lower levels of protein and higher levels of salt and umami are more desirable. The highest levels are found in a sauce called Red Boat, which prides itself on levels of 50g per litre. This sauce is marketed world-wide but does not sell well in South East Asia. Conversely the protein levels of *Colatura di Alici* ranges greatly. The original process whereby the anchovy was preserved resulted in a protein level of 10g per litre, while the later process whereby the fish are reduced to waste and aged, and can achieve the same protein levels as Red Boat. See Cetara anchovy sauce – Organoleptic properties of Cetara anchovy sauce, <https://www.colaturadialici.it> [18 XII 2023]; Characterization of the production process, chemical and microbiological quality of the traditional anchovy sauce “Colatura di alici” from Cetara, Italy, <https://www.researchgate.net/publication/264537169> [18 XII 2023]. Sauces can and probably were made from fish viscera alone which though considered waste would still provide a protein source. Such material is not only easier to extract but a form of fish waste matter that normally causes environmental problems in modern fisheries. We can see that this kind of sauce was a traditional product in the parts of modern Turkey that still have cultural links to their medieval Eastern Roman Empire ancestors: a pre-Islamic culture, known as *Rûm*, a term derived from the Greek for Roman. Today in parts of Anatolia local fishermen make fish sauces from fish waste and they are utilised in the same way as the Romans to flavour every day food. See A. DALBY, *Flavours of Byzantium*, Totnes 2003.

⁵³ A. CARANNANTE, C. GIARDINO, U. SAVARESE, *In Search of Garum. The “Colatura d’alici” from the Amalfitan Coast (Campania, Italy): an Heir of the Ancient Mediterranean Fish Sauces*, [in:] *Atti del 4° Convegno Nazionale di Etnoarcheologia (Roma, 17–19 Maggio 2006) / Proceedings of the 4th Italian Congress of Ethnoarchaeology (Rome, 17–19 May, 2006)*, ed. F. LUGLI, A.A. STOPPIELLO, S. BIAGETTI, Oxford 2011 [= BAR, 2235], p. 69–79.

to switch the emphasis to concentrating on the liquor as a seasoning and discarding the fish. I believe it is still possible to obtain an original *colatura di alici* which is aged for about 4–6 months, but the bulk of the commercial product is obtained from a 2–4-year extraction process that leaves the fish paste as a waste product⁵⁴.

In the ancient world *muria* was not just a simple brine, i.e. salt dissolved in water, and there were different terminologies associated with the various concentrations of sea water⁵⁵. *Muria* could be light in colour, but after a relatively short ageing process, oxidation causes the brine to darken. *Muria* was probably saltier than *garos* and potentially weak in umami when young. We can conjecture that a young fresh *muria* was traded and utilised, yet it is also clear that some *muria* remained with the salted fish for up to four years according to the amphora labels⁵⁶. It does not seem remotely possible to consume four-year-old salted fish. This is an open question as samples have never been tasted. I suspect that this aged fish was not consumed and the process was meant to exhaust and then discard the fish just as *colatura di alici* does, while creating an intense and umami rich sauce that resembled *liquamen* in every sense: colour and taste while being ritually clean. An aged *colatura* is as good as a good South East Asian sauce in terms of umami. I have experimented with making *muria*; it could not be distinguished visually from *liquamen* after six months, and it was difficult to distinguish by taste too. Both had the umami salty hit. However, an experienced consumer would be able to detect the absence of the complexity brought about by the higher protein levels that would have been expected and required by a connoisseur. One way to understand Ausonius' letter is to understand that over time, *muria* had become an alternative form of *liquamen*, utilised in the same way as *liquamen* but acceptable in the wider Christian world. We can see this distinction clearly in the differences between the original *colatura di alici* as anchovy filterings, which was relatively weak and low in protein, and the aged version, which is comparable to a quality modern fish sauce such as Red Boat⁵⁷. The original *colatura*, for all its umami, did not have the depth and rich long lasting after-taste of an enzyme fermented sauce. Among the *liquamen*-type sauces available to the ancients there were always going to a huge variety in quality which was dependant on the species utilised, duration of production and salt levels. A fine aged mackerel *liquamen* was highly distinctive, while basic *liquamen* type sauces made with multiple smaller species were less distinctive and could also be diluted, and were consequently very similar to each other. I suspect that most everyday consumers would not be able distinguish them from a sanitised aged *muria*. It must be stated that these sauces, whether *liquamen*

⁵⁴ Despite this switch in emphasis the manufacturers continue to eviscerate and discard the initial bloody fluid, despite that fact that this material would surely enhance the product through the presence of digestive enzymes.

⁵⁵ See PLINY THE ELDER, XLII, 90sqq.

⁵⁶ S. GRAINGER, *Story of Garum...*, p. 256sqq.

⁵⁷ See n. 49 above.

or *muria*, were not made with additional blood harvested from other fish, as some scholars continue to believe⁵⁸.

The manufacturers of the original *colatura di alici* took great pains to eliminate all the blood from the fish, as the slightest residue would spoil the anchovy. This is clearly important if the anchovies are meant to retain their integrity as a salted fish product. All salted fish was naturally cleansed in this way to ensure it was free of blood before salting. It is also apparent that in many modern orthodox Jewish communities, fresh meat and fish is subject to the same process, i.e. a brief period of salting to draw out the blood before preparation and consumption. These practices are documented in orthodox communities both Jewish and Christian⁵⁹. The basis for these long-held practices comes from the Old Testament.

You must not eat any blood whatever, either of bird or of animal, in any of your settlements. Any one of you who eats any blood shall be cut off from your kin (Lv. 7: 26–27).

⁵⁸ The distinction between *garos*, *garum*, *muria* and *liquamen* is still greatly disputed among scholars of ancient history largely because of the immense confusion engendered by the distinction between transliterating *garos* into *garum*, before the blood viscera sauce was invented and *liquamen* coined, and translating *garos* into *liquamen* after that point. The idea of the universal fish sauce that simply changed its name every few decades is understood by scholars who follow the original work by R.I. CURTIS, *Garum...* This universal sauce is believed to have been made from small and medium sized fish with both extra blood and viscera, all blended together into one single entity. For these scholars the distinction in terminology is to be found in the size and species utilised rather than the presence or absence of blood and or viscera. See for instance V. PALACIOS, E. GARCIA, D. BERNAL CASASOLA, A. ROLDAN, Á. RODRIGUES, J. SANCHEZ, *Conservas antiguas y gastronomía contemporánea*, [in:] *Un Estrecho de Conservas. Del Garum de Baelo Claudia a la melva de Tarifa*, ed. D. BERNAL CASASOLA, J.Á. ESPÓSITO ÁLVAREZ, L. MEDINA GRANDE, J.S. VICENTE-FRANQUEIRA GARCA, Cádiz 2016, p. 89–105 at p. 92. See also S. GRAINGER, *The Story of Garum...*, p. 114sq. I would argue that there are five recipes in total for fish sauce of the *garos/liquamen* type, four in the *Geoponica* and one from a Byzantine gloss to a 3rd Century medical treatise by Gargilius Martialis. Only one adds extra viscera, and that is to fish that are small enough not to be cut open. The remaining four do not add extra and state or imply that the fish are cut open, exposing the viscera and thus removing the requirement for external digestive enzyme to dissolve the fish. This was the principal reason that extra viscera were added. Conversely, none of these recipes mention fish blood. Fish blood is immensely difficult to harvest as a separate ingredient, and is the principal ingredient along with viscera in the elite tuna *garos haimation* in the *Geoponica*, which is equivalent to the mackerel *garum sociorum* from Martial's *Xenia* gifts (see n. 21 above, and S. GRAINGER, *Story of Garum...*, p. 13–79).

⁵⁹ *The salting is done with coarse grain salt, commonly referred to as kosher salt, after which the meat is laid over a grating or colander to allow for drainage, remaining so for the duration of time that it takes to walk one biblical mile (approximately 18–24 minutes). Afterwards, the residue of salt is rinsed away with water, and the meat cooked. Meat that is roasted requires no prior salting, as fire causes a natural purging of blood. Some Orthodox Jewish communities require the additional stricture of submersing raw meat in boiling water prior to cooking it. This was believed to constrict the blood lodged within the meat, to prevent it from oozing out when the meat was eaten. The raw meat is left in the pot of boiling water for as long as it takes for the meat to whiten on its outer layer, https://en.wikipedia.org/wiki/Kashrut#Permitted_and_forbidden_animals [10 XII 2023].*

Only be sure that you do not eat the blood; for the blood is the life, and you shall not eat the life with the meat. Do not eat it; you shall pour it on the ground like water (Dt. 12: 23–24).

All creatures intended for consumption had to be sacrificed, i.e. slaughtered ritually by severing arteries and allowing the blood drain on to the ground. Whether this injunction to sacrifice originally included fish in the ancient world turns out to have been a subject of considerable debate.

The whole body of Jewish dietary law, the Torah, was derived from the laws found in the Old Testament: this is a text that posed great difficulties in terms of interpretation, hence the need for Rabbinical debate. Prior to the destruction of the temple in 70 CE, Judaism included a broad number of sectarian groups such as the Pharisees, Sadducees, and Essenes, who frequently argued over biblical interpretation of the dietary laws. Urban practices were different from rural and sectarian enclaves where stricter rules were adhered to. The Essenes are understood to have lived outside of Jerusalem in the desert at Qumran, and it is here that the dead sea scrolls provide examples of dietary debates. Jodi Magness has highlighted the issues that continued to be controversial after the destruction of the Temple 70 CE and the consumption of fish blood is one them. Magness confirms that *The biblical verses refer only to animals and birds in connection with the blood prohibition, but from the Damascus Document we can see that the Qumran sect extended this prohibition to include fish and locusts, thereby making (un)necessary ritual*⁶⁰:

The blood of fish is strictly prohibited: they shall not eat them unless they have been torn while still alive and their blood poured out.

Evidence from other Rabbinical sources suggests that other rabbis condemned the slaughtering of fish as heterodoxy, as it was seen as an unworkable prohibition due to the fact that few consumers had access to fish early enough to bleed them⁶¹. One can comprehend that large species of scombrids such as tuna and mackerel could and should be bled where they are freshly caught and the process was clearly practiced quite widely either as a means of simply cleaning the fish or, as the Romans subsequently developed, a means of obtaining blood for *garum*. To extract fresh liquid fish blood the process had to take place immediately the fish were caught and before the heart stops pumping otherwise the blood coagulates and remains hidden in the cranium. The subsequent salting process allows the blood to re-liquefied and be drawn out, but it would inevitably alter the texture

⁶⁰ J. MAGNESS, *Sectarianism Before and After 70 CE*, [in:] *Was 70 CE a Watershed in Jewish History?*, ed. D.R. SCHWARTZ, Z. WEISS, Leiden 2012 [= AJECh, 78], p. 69–89 [downloaded 18 XII 2022].

⁶¹ Another rabbinical debate from the Dead Sea Scrolls, 'Jubilees', states that *only the blood of beasts and birds were forbidden*, which may reflect the on-going debate in action as clearly not everyone at Qumran was prepared to adhere to this.

of the fish and would probably be unsuitable for *garum sociorum*. To be obedient to these laws meant you could not consume truly fresh fish⁶².

Despite these strict practices in certain communities, it is apparent that from amphora data in the cities, elite Hellenistic and Roman practices were common, and fish sauces of the *liquamen* and *garum* type seem to have been popular in Palestine. There is also the possibility that a local fresh water version was made from Nile species⁶³. Jerusalem elites would publicly observe biblical food laws, yet in private consume imported delicacies and exotic types of Roman cuisine. From a rare bilingual amphora label depicting 'garum' in Latin letters followed by *basileus*, meaning 'of the king,' we can see that in the early 1st century CE, Herod the Great was probably consuming the new and very fashionable blood *garum* at Masada. There is little doubt that since the fish sauce of the *garos/liquamen* type was originally Greek there would have been no logic to the bilingual label unless the Roman blood *garum* was meant here and they had to use the Latin to convey it. It was so new that terms like *haimation/melan* were simply not in use⁶⁴. The regular fermented *liquamen*-type sauce continued to be traded into urban Palestine throughout the mid- to late-imperial periods alongside a local product, though not in immense quantities. The fifth-century CE rabbinical debates quoting the earlier Palestinian Mishnah (3rd c. CE) are specifically about the number of times that an amphora of unfiltered fish sauce (the bony fish paste known as *allec*) could be re-brined to extract sauces. These sauces were collectively known as *muries*: a term that is clearly associated linguistically with *muria*. Given that this fish material described as *muries* could be re-brined three times, it seems highly likely that this was an enzyme-fermented *liquamen*-type sauce of unknown origin, rather than a cleaned salted fish in brine, which logic might dictate could not generate more than one liquid from its aging process⁶⁵.

⁶² That a ritually pure *liquamen* was necessary in Jewish dietary laws is clear from the confused suggestion from Pliny the Elder that a sauce was created with fish without fins and scales for this purpose, whereas it was clearly the reverse: see PLINY THE ELDER, XLIV, 95. Palladius also gives a recipe for a *liquamen de piris castimoniale*, meaning a ritually pure *liquamen* made with pears (PALLADIUS, III, 25, 12). The term is defined as pertaining to abstinence and is associated with ecclesiastic, biblical and religious purity.

⁶³ C. VIEGAS, *Long-distance Imported Pottery at Horvat Kur (Galilee, Israel): Categories and Quantities*, RCRFA 46, 2020, p. 559; W. VAN NEER, A. ERVYNCK, P. MONSIEUR, *Fish Bones and Amphorae: Evidence for the Production and Consumption of Salted Fish Products Outside the Mediterranean Region*, JRA 23, 2010, p. 161–195, at p. 187. N.N. RAAD, *Roman Amphorae in the Near East: a Study of the Distribution of Spanish, North African, and Local Types* (MA. Dissertation, American University of Beirut. Department of History and Archaeology, 2015), p. 34, <http://hdl.handle.net/10938/10937> [19 XII 2023].

⁶⁴ P. BERDOWSKI, *Garum of Herod the Great (a Latin-Greek Inscription on the Amphora from Masada)*, AAR 1, 2006, p. 239–257; H. COTTON, O. LERNAU, Y. GOREN, *Fish Sauce from Herodian Masada*, JRA 9, 1996, p. 223–238.

⁶⁵ On the re-brining of *allec*, see S. GRAINGER, *Story of Garum...*, p. 229sq. *Hileq* (*allec*) and *muries* were permitted in the Talmuds when prepared commercially by a non-Jewish expert if the fish pieces

Muries also referred to a grain-based umami-generating liquor, but it seems to have only been utilised in the Babylonian Talmudic sources⁶⁶. However, it is noteworthy that switching to a grain umami liquor removes all fear of inadvertent blood consumption. The term *muries* remains obscure, but I think it reflects a tendency for a word associated with *muria* to be the term that travelled rather than *garos*. Susan Weingarten tells me that loan words from Latin were very rare in Hebrew, while the word *garon* was already in use to mean ‘throat’ and also *tzir* was used to denote a local form of *muria salsamenta*. One can almost hear the trader and merchant negotiating the new terminology to make life easier for them and their customers so that *muries* was coined to accommodate the changing commercial situation just as the term *liquamen* was conjured up to solve a similar problem in Rome.

The rabbinic debates about sacrificing fish in order to avoid fish blood continued into the 4th century. The rabbi Jacob of Kefar Neburaya was advocating in Tyre that fish should be ritually slaughtered, i.e. bled at death, and his fellow rabbis objected and threatened him with flogging for advising his followers to adhere to such onerous prescriptions⁶⁷. Nevertheless, rejecting fish blood was surely going to be an outlier in terms of practices and so we cannot determine to what extent these prohibitions were followed by Jews generally. It is equally difficult to judge when considering Jews newly converted to Christianity. It is not impossible to imagine that the prohibition on the consumption of blood of all creature was maintained by some Jewish converts and through their influence and insistence taken up by some early Christians. There is evidence in biblical sources that Jewish converts remained strictly observant of dietary laws. A group of converts escaping from persecution in Jerusalem in the mid-1st century CE, newly arrived in Antioch were able to influence the behaviour of their fellow gentile converts in relation to diet. A letter in Acts is said to have been written by a council of apostles from the Judaeans Christians in Jerusalem to the Gentile Christians in Antioch, Syria, and Cilicia, where there had been considerable conflict over purity laws. There is no suggestion that fish blood played any part in the conflict as it was mainly concerned with communal dining and circumcision. The letter suggest that the

were identifiable as kosher, i.e. with fins and scales, before the *muries* was extracted. *The Mishnah teaches that ‘muries’ of non-Jews is prohibited. But the rabbis taught that ‘muries’ prepared by an expert is permitted. Rabbi Judah ben Gamliel says in the name of Rabbi Hanina ben Gamliel: ‘Hileq’ (alleg) prepared by an expert is also permitted. Avimi the son of R. Abbahu learned that ‘muries’ of an expert is permitted; but he added a further explanation: only the first and second [extracts] are permitted, but the third is forbidden, because there is plenty of fat and they do not need wine, but after this wine is put into it* (Babylonian Talmud *Avodah Zarah* 34b). I am grateful to Susan Weingarten for this information.

⁶⁶ S. WEINGARTEN, *Fish and Fish Products in Late Antique Palestine and Babylonia in their Social and Geographical Contexts: Archaeology and the Talmudic Literature*, *JMarA* 13, 2018, p. 235–245.

⁶⁷ <https://www.jewishencyclopedia.com/articles/8429-jacob-of-kefar-neburaya> [18 XII 2022]; see also J. MAGNESS, *Sectarianism before...*, p. 84.

gentiles should abstain from anything that the Jews converts found particularly offensive, and there were four criteria:

For it has seemed good to the Holy spirit and to us to impose on you no further burden than these essentials: that you abstain from what has been sacrificed to idols, and from blood and from what is strangled and from fornication⁶⁸.

Having been formally instructed in this way, abstaining from blood without any clarification could easily have been taken to include fish and would have been taken very seriously and a prolonged observance of the rule is possible among many Christians in Syria. Biblical commentaries question the fact that this instruction was only sent to Syria and did not become an injunction everywhere. It obviously did not, as animal blood consumption was normalised in many parts of the Christian world. Clearly as the new church developed the injunction against the consumption of blood generally became less enforced and enforceable. Blood sausage was a popular cheap and nutritious food resource that it was always going to be difficult to reject when protein resources were scarce. The blood prohibition was always more concerned with meat, of course. It is my contention that this letter and its instruction to abstain from blood led to a rejection of fish sauces that utilize blood and viscera in their production amongst some members of these Syrian Christian communities. We can see a suggestion that this abstinence was maintained and became normalised in the apparent use of the term *muria* in place of *garos* or *liquamen* in 5th century CE Syria as recounted in an (albeit confused) scholia to Horace. The unknown writer is commenting on the satire in which the composite sauce made with a *muria* rather than a *garum* is described⁶⁹:

muriam antiquae dicebant liquamen et Syrorum lingua sic dicitur

The ancients called *liquamen muria* and this is what it is called in the Syrian language.

This is immensely difficult to unpick. The writer is unfamiliar with these sauces and appears to have taken the lines in Horace literally. The comment is presumably contemporary with a time when *garum* or *garos* as terms for a fermented sauce had virtually disappeared from usage and consumption in all areas of Roman influence, and the blood viscera *garum* was part of myth and legend. *Liquamen* was the vernacular term for the umami-impacting sauce available at the time of writing, and the commentator assumes that is what Horace meant by the term *muria*⁷⁰. As we

⁶⁸ Act. 15, 28–29.

⁶⁹ HORACE, S. II, 4, 63–71.

⁷⁰ Scholia to HORACE, *Satire*, 2.4.65. In the west, fish sauce declines rapidly after the 5th century and only survives in tiny pockets of production. Anthimus (9) advises consumers to reject *liquamen* entirely. In later Byzantine cuisine sauces made with *garos* are not that commonplace and it is still a relatively elite consumption practice, and as has been noted by Ilias Anagnostakis (pers. comm.),

have noted, the use of *muria* here meant a *muria salsamenta* in Horace's satire as its use reflected a Hellenistic practice embraced by Rome in the 1st century BC. The writer simply notes in passing that *muria* has become the preferred term in Syriac Aramaic for whatever form of umami imparting sauce was available in that area.

We have some corroborating evidence that there was a continuing use of a fish brine instead of a fermented sauce from medieval Cyprus. William Woys Weaver is working on the food of Medieval Cyprus, and has noted that, though *garos* was the preferred term for the umami imparting sauce in use, it was in fact a sanitised fish brine⁷¹. Woys Weaver is working on the unpublished tax records from the 1250s from Cyprus. They are written in Greek, Italian, and French and even versions in Aramaic are believed to exist in Turkey. He tells me that Cypriot Greeks relied on salted fish from Christian Armenia or from Egypt for their *garos*. The salt cured fish from Egypt is called *pisson salé de Babiloine*, 'Babylonian salted fish' in the French version of the tax records, i.e. Egyptian salted perch, but in the Greek translation of these records this was known as Coptic *garos* without clarification. Woys Weaver believes that these communities rejected fermented sauces because of the blood/viscera and this injunction was more strictly enforced by the Cypriot Church than in other parts of the Greek Orthodox world. Here at this time *garos* was not fermented with digestive enzymes.

Conclusion

It seems likely from this disparate evidence that in some regions of the east a viscera-fermented *liquamen* was rejected and replaced with a ritually clean version. It seems likely that the distinction between the two types of production gradually became less important as the desired and required effect on the food was the same. Sauces that impart umami could also be quickly cooked and frequently were as the complex supply chain of a commercial product broke down in the late empire. The recipes for fish sauce in the *Geoponica* also include a cooked and reduced version and we find many similar recipes for cooked and heavily spiced versions of fish sauce in Late and Byzantine sources⁷². The recipes for fish sauce in the *Geoponica* are understood to reflect a Byzantine idea of these products. Sauces were either

with the reduction in access to oil in the Byzantine period, the idea of sauces made with *garos* also declines. An episode that took place during the embassy of Liutprand of Cremona to the Byzantine court in 969 demonstrates the gulf that was opening up between the different food preferences of the Western Europe and Byzantium courts. Liutprand, seated at the table of the first banquet the Basilean Nicephorus Phocas offered to him, came face to face with *garos* and complained that the meal was *foul with an exceedingly bad fish liquor*. LIUTPRAND OF CREMONA, *Relatio de legatione constantinopolitana*, ch. 11.914.

⁷¹ W. WOYS WEAVER, *Food and Drink in Medieval Cyprus: The French Court, The Greek Gentry, and the Village Serfs*, Wiesbaden (forthcoming).

⁷² S. GRAINGER, *Story of Garum...*, p. 39, 88sq.

cooked or enzyme fermented and the idea of a recognised sanitised fish brine is absent from this text. We might therefore assume that the idea of a *muria* in place of *garos* was not a common phenomenon in the Western empire and the Byzantine Greek world⁷³. Salted fish continued to be traded very widely and there must have been immense quantities of both aged and fresher fish brines circulating throughout the Mediterranean at ports and markets and one must ask what was it used for? There is always the potential for reuse: Archestratus recounts the process whereby fish pieces are initially preserved in layers of dry salt and then after three days the fish is placed into amphora in pre-prepared and potentially reused fish brine⁷⁴. We also know from Pliny that fish brines were boiled again to extract the salt from them and apparently a salt derived from sardine brine was considered the best⁷⁵. Certainly, *muria* from this trade appears absent from recipe texts as a separate seasoning like *garos*. We may still conclude that it may have continued to be utilised in the same way as it was in Hellenistic times, though at a much lower social scale to that of the readers of recipe books. It may have been used as a dipping sauce or as a potential cooking medium to poach fish and as a low value young fish brine that had little flavour, it still may have been a commonplace *garos* substitute for the very poor, as reflected in the dismissive attitude in Ausonius letter.

To bring this fish sauce discussion into the modern era: in the mid-16th century, Bruyerins' culinary work *De re cibaria* recommends a recipe that melts salted anchovy in vinegar and oil to create a sauce that that he calls *garum* and considers superior in every way to a Roman *garum*. The sources at this time talk about the blood and viscera with some incomprehension while enthusing about their sanitised *garum*⁷⁶. I think we can agree that there will always be something disturbing about fermented fish viscera.

⁷³ However, I suspect the *Geoponica* recipes for fish sauce reflect a much earlier period. Andrew Dalby has pointed out that over 50% of the text is derived from Hellenistic and early Roman sources rather than any agricultural and culinary practices contemporary with the manuscripts date of 11th century (A. DALBY, *Geoponica*..., p. 36–49).

⁷⁴ S. GRAINGER, *The Story of Garum*..., p. 177, Frag. 39, ATHENAEUS, 117a.

⁷⁵ PLINY THE ELDER, XXXI, 83. Modern fish sauce manufacturers extract salt from their fish sauces for the gourmet market.

⁷⁶ BRUYERIN, *De re cibaria*, p. 572–573; T.S. PETERSON, *Acquired Taste. The French Origins of Modern Cooking*, Ithaca 1994, p. 138.

Bibliography

Primary Sources

- ALCIPHON, AELIAN, PHILOSTRATUS, *The Letters*, ed. et trans. A.R. BENNER, F.H. FOBES, Cambridge, Mass. 1959 [= Loeb Classical Library, 383].
- Apicius. *A Critical Edition with Introduction and English Translation*, C. GROCOCK, S. GRAINGER, Totness 2006 (2nd ed. 2020).
- Archestratos of Gela. Greek Culture and Cuisine in the Fourth Century BCE*, text, trans. et comm. S.D. OLSON, A. SENS, Oxford 2000.
- ARISTOPHANES, *Acharnians. Knights*, ed. et trans. J. HENDERSON, Cambridge, Mass. 1998 [= Loeb Classical Library, 178], <https://doi.org/10.4159/DLCL.aristophanes-acharnians.1998>
- ATHENAEUS, *The Learned Banqueters*, vol. I–VII, ed. et trans. S.D. OLSON, Cambridge, Mass. 2007 [= Loeb Classical Library, 204], https://doi.org/10.4159/DLCL.atheneus_grammarian-learned_banqueters.2007
- CATO, VARRO, *On Agriculture*, trans. W.D. HOOPER, H.B. ASH, Cambridge, Mass. 1934 [= Loeb Classical Library, 283], <https://doi.org/10.4159/DLCL.varro-agriculture.1934>
- Diokletians Prisedikt*, ed. S. LAUFFER, Berlin 1971.
- HORACE, *Satires. Epistles. The Art of Poetry*, trans. H. RUSHTON FAIRCLOUGH, Cambridge, Mass. 1926 [= Loeb Classical Library, 194], <https://doi.org/10.4159/DLCL.horace-satires.1926>
- MANILIUS, *Astronomica*, ed. et trans. G.P. GOOLD, Cambridge, Mass. 1977 [= Loeb Classical Library, 469], <https://doi.org/10.4159/DLCL.manilius-astronomica.1977>
- PALLADIUS, *Opus Agriculturae. The Work of Farming*, trans. J.G. FITCH, Totnes 2013.
- PLAUTUS, *Amphitryon. The Comedy of Asses. The Pot of Gold. The Two Bacchises. The Captives*, ed. et trans. W. DE MELO, Cambridge, Mass. 2011 [= Loeb Classical Library, 60], https://doi.org/10.4159/DLCL.plautus-two_bacchises.2011
- PLAUTUS, *The Merchant. The Braggart Soldier. The Ghost. The Persian*, ed. et trans. W. DE MELO, Cambridge, Mass. 2011 [= Loeb Classical Library, 163], https://doi.org/10.4159/DLCL.plautus-braggart_soldier.2011
- PLINY THE ELDER, *Natural History*, trans. H. RACKHAM, Cambridge, Mass. 1938 [= Loeb Classical Library, 330], https://doi.org/10.4159/DLCL.pliny_elder-natural_history.1938
- SENECA, *Epistles*, vol. III, *Epistles 93–124*, trans. R.M. GUMMERE, Cambridge, Mass. 1925 [= Loeb Classical Library, 77].
- SOPHOCLES, *Fragments*, ed. et trans. H. LLOYD-JONES, Cambridge, Mass. 1996 [= Loeb Classical Library, 483].

Secondary Literature

- BERDOWSKI P., *Garum of Herod the Great (a Latin-Greek Inscription on the Amphora from Masada)*, “*Analecta Archaeologica Ressoviensia*” 1, 2006, p. 239–257.
- BERNAL CASASOLA D., ARÉVALO A., LORENZO L., AGUILERA L., *Imitations of Italic Amphorae for Fish Sauce in Baetica. New Evidence from the Salt-fish Factory of Baelo Claudia (Hispania)*, “*Rei Cretariae Romanae Fautorum Acta*” 38, 2003, p. 305–313.
- BIRAUD M., ZUCKER A., *The Letters of Alciphron. A Unified Literary Work?*, Leiden 2019 [= *Mnemosyne. Bibliotheca Classica Batava. Supplementum*, 424].

- CARANNANTE A., GIARDINO C., SAVARESE U., *In Search of Garum. The “Colatura d’alici” from the Amalfitan Coast (Campania, Italy): an Heir of the Ancient Mediterranean Fish Sauces*, [in:] *Atti del 4° Convegno Nazionale di Etnoarcheologia (Roma, 17–19 Maggio 2006) / Proceedings of the 4th Italian Congress of Ethnoarchaeology (Rome, 17–19 May, 2006)*, ed. F. LUGLI, A.A. STOPPIELLO, S. BIAGETTI, Oxford 2011 [= *British Archaeological Reports*, 2235], p. 69–79.
- The Colloquia of the Hermeneumata Pseudodositheana*, ed. et trans. E. DICKEY, Cambridge 2012 [= *Cambridge Classical Texts and Commentaries*, 53].
- CORCORAN T.H., *Roman Fish Sauces*, “*Classical Journal*” 58, 1962, p. 204–210.
- CORRALES P.A., PRIETO J.M.C., AGUILAR M.C., PADILLA J.S., *Salsamenta malacitano: avances de un proyecto de investigación. Itálica*, “*Revista de Arqueología Clásica de Andalucía*” 1, 2011, p. 29–50.
- COTTON H., LERNAU O., GOREN Y., *Fish Sauce from Herodian Masada*, “*Journal of Roman Archaeology*” 9, 1996, p. 223–238, <https://doi.org/10.1017/S1047759400016585>
- CURTIS R.I., *Garum and Salsamenta. Production and Commerce in Materia Medica*, Leiden 1991 [= *Studies in Ancient Medicine*, 3], <https://doi.org/10.1163/9789004377264>
- DALBY A., *Flavours of Byzantium*, Totnes 2003.
- DALBY A., *Geoponika: Farm Work. A Modern Translation of the Roman and Byzantine Farming Handbook*, Totnes 2011.
- GOWERS E., *The Loaded Table. Representations of Food in Roman Literature*, Oxford 1993, <https://doi.org/10.1093/oso/9780198146957.001.0001>
- GRAINGER S., *The Story of Garum. Fermented Fish Sauce and Salted Fish in the Ancient World*, Abingdon 2021.
- LEIGH M., *Food in Latin Literature*, [in:] *A Companion to Food in the Ancient World*, ed. J. WILKINS, R. NADEAU, Hoboken 2015, p. 43–52, <https://doi.org/10.1002/9781118878255.ch3>
- LEON J.M., *A propósito de la marca Soc y en torno al Garum Sociorum*, “*Habis*” 32, 2001, p. 171–184.
- LYTLE E., *The Economics of Saltfish Production in the Aegean During the Classical and Hellenistic Periods*, “*Journal of Maritime Archaeology*” 13.3, 2018, p. 407–418, <https://doi.org/10.1007/s11457-018-9207-1>
- MAGNESS J., *Sectarianism Before and After 70 CE*, [in:] *Was 70 CE a Watershed in Jewish History?*, ed. D.R. SCHWARTZ, Z. WEISS, Leiden 2012 [= *Ancient Judaism and Early Christianity*, 78], p. 69–89, https://doi.org/10.1163/9789004217447_006
- MILLHAM M.E., *Toward a Stemma and Fortuna of Apicius*, “*Italia Medioevale e Umanistica*” 10, 1967, p. 259–320.
- MYLONA D., *Fish-Eating in Greece from the Fifth Century B.C. to the Seventh Century A.D. A Story of Impoverished Fishermen or Luxurious Fish Banquets?*, Oxford 2008 [= *British Archaeological Reports*, 1754], <https://doi.org/10.30861/9781407301938>
- PALACIOS V., GARCIA E., BERNAL CASASOLA D., ROLDAN A., RODRIGUES Á., SANCHEZ J., *Conservas antiguas y gastronomía contemporánea*, [in:] *Un Estrecho de Conservas. Del Garum de Baelo Claudia a la melva de Tarifa*, ed. D. BERNAL CASASOLA, J.Á. ESPÓSITO ÁLVAREZ, L. MEDINA GRANDE, J.S. VICENTE-FRANQUEIRA GARCA, Cádiz 2016, p. 89–106, <https://doi.org/10.37049/9788498285703>
- PETERSON T.S., *Acquired Taste. The French Origins of Modern Cooking*, Ithaca 1994.
- RAAD N.N., *Roman Amphorae in the Near East: a Study of the Distribution of Spanish, North African, and Local Types* (MA. Dissertation, American University of Beirut. Department of History and Archaeology, 2015).

- RODRÍGUEZ-ALCÁNTARA A., ROLDÁN-GÓMEZ A.M., BERNAL CASASOLA D., GARCÍA-VARGAS E., PALACIOS-MACÍAS V.M., *New Technological Contributions to Roman Garum Elaboration from Chemical Analysis of Archaeological Fish Remains from the 'Garum Shop' at Pompeii (I. 12.8)*, "Zephyrus" 82, 2018, p. 149–163, <https://doi.org/10.14201/zephyrus201882149163>
- STUDER J., *Roman Fish Sauce in Petra, Jordan*, [in:] *Fish Exploitation in the Past. Proceedings of the 7th Meeting of the ICAZ Fish Remains Working Group*, ed. W. VAN NEER, Tervuren 1994 [= *Annales du Musée Royal de L'Afrique Centrale, Sciences Zoologiques*, 274], p. 191–196.
- VAN NEER W., ERVYNCK A., MONSIEUR P., *Fish Bones and Amphorae: Evidence for the Production and Consumption of Salted Fish Products Outside the Mediterranean Region*, "Journal of Roman Archaeology" 23, 2010, p. 161–195, <https://doi.org/10.1017/S104775940000235X>
- VIEGAS C., *Long-distance Imported Pottery at Horvat Kur (Galilee, Israel): Categories and Quantities*, "Rei Cretariae Romanae Fautorum Acta" 46, 2020, p. 559–567, <https://doi.org/10.2307/j.ctv1gt94kk.62>
- WEINGARTEN S., *Fish and Fish Products in Late Antique Palestine and Babylonia in their Social and Geographical Contexts: Archaeology and the Talmudic Literature*, "Journal of Maritime Archaeology" 13, 2018, p. 235–245, <https://doi.org/10.1007/s11457-018-9210-6>
- WILKINS J., *Cooking and Processing Fish in Antiquity: Questions of Taste and Texture*, "Journal of Maritime Archaeology" 13.3, 2018, p. 225–234, <https://doi.org/10.1007/s11457-018-9194-2>
- WILKINS J., *Fish as a Source of Food in Antiquity*, [in:] *Ancient Fishing and Fish Processing in the Black Sea Region*, ed. T. BEKKER-NIELSEN, Aarhus 2005, p. 21–30.
- WOYS WEAVER W., *Food and Drink in Medieval Cyprus: The French Court, The Greek Gentry, and the Village Serfs*, Wiesbaden (forthcoming).

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