

BOUND FOR
DISASTER

POMPEII & HERCULANEUM



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MOESGAARD MUSEUM

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Mosaic by L. Aelius Magnus from Pompeii, depicting the marine fauna that, like the sea, played a major role in the lives of the communities around the Bay of Naples.

POMPEII AND THE FERMENTED FISH

BY DARÍO BERNAL-CASASOLA & DANIELA COTTICA

Pompeii, like all the coastal and near-coastal towns and cities of *Mare Nostrum*, maintained an intense and daily relationship with the sea, and with the wide variety of marine resources provided by it. From fish of all types and prices, to molluscs, cephalopods and crustaceans, of which we have varied and significant iconographic representations in the mosaics on the floors of houses and buildings around the Bay of Naples – as well as on their walls, richly and delicately ornamented with polychrome mural paintings. But if one thing made Rome stand out from all other ancient societies in relation to the consumption of marine products, it was the fame and international importance of its fermented fish sauce, *garum*.

Throughout history there are some food products that stand the test of time, while others simply disappear. Fish sauces were introduced to the West by the Phoenicians, although they have their roots in Egypt and Mesopotamia; cultures where the processing, salting, smoking and drying of fish enjoyed a remarkable tradition. Fish sauces endured in the Mediterranean kitchen from at least the 8th or 7th century BC until Late Antiquity; their decline coinciding with the arrival of Islam in what are now European territories: The latter changed many habits and customs, including culinary traditions.

Today, we have practically forgotten the importance of food preservation, because in contemporary society frozen or refrigerated foods maintain their organoleptic properties for months and can be consumed on demand. In Antiquity, the preservation of food was undertaken mainly with salt, which was a very expensive commodity due to its important properties and its required use in gastronomy: Pompeii also had salt works on large intertidal platforms located along the Sarno river; a complex system equipped with canals and crystallisers, through which the precious product that has given its name to our monthly wage (*salarium*, i.e. salary) was obtained.

The Romans consumed two main types of marine products processed with salt: One was *salsamentum*, a side of salted fish, as described by Columella, with red tuna being the most appreciated. This conservation method still exists today, and we can buy pieces of salt cod or other large fish in the market. These must be rehydrated and desalinated before consumption but can last for months in our cupboards. The other product is fish sauce, the result of fermenting fish in brine (saltwater), together with other ingredients. In the Far East, these liquid fish sauces were and are used daily, much like we use oil today, acquiring different names depending on their place of origin (Cambodia = *prahoc*; Thailand = *nam-pla*; Vietnam = *nouc man* ...). There is a wide variety of products, depending on manufacturing methods and the ingredients used.

In Europe, in contrast, this important Roman gastronomic heritage has largely been lost, except for a few residual products such as the Italian *colatura di alici* or the French *pissalat*. The Romans manufactured various types of fish sauce, of differentiated denominations (*garum*, *liquamen*, *muria*, *allec*, *laccatum*, *lymphatum* etc.), with the common denominator that they are all the result of a salt fermentation process. Ancient recipes clearly explain how these products were manufactured: To make *garum*, it was necessary to put the offal and non-meat parts of large fish (head, skeleton, blood, fins, tail, guts etc.) in salt, to prevent the initiation of the putrefaction process; to this were added all kinds of ingredients according to the taste of the consumer: small fish, molluscs, sea urchins, oysters, wine, oil etc. – the combination of which defined the final bouquet of the product. This mixture was then left to ferment by itself, an automatic process that started due to enzymes in the guts of the fish, which began to dissolve the meat. After passing through a sieve, possibly of linen,



Garum factory in operation.
Reconstruction based on excavations of a fish-sauce factory in Nabeul, Tunisia.

two products resulted. The first was a liquid fraction of amber colour with an intense taste of the sea and with excellent organoleptic, healing and, according to some authors, even aphrodisiac properties, the *garum primum optimum* or so-called “*garum flower*” (*gari flos*); the result of the first pressing. The second was a solid fraction of much greater volume and full of spines: a micronised product of poorer quality called *allec*. These products were highly prized in the Roman daily diet and could fetch astronomical prices in the markets. This is reflected in the table of equivalences, giving the maximum prices of the main everyday products and aimed at containing inflation, of which Diocletian’s version survives. The best *garum* competed in price with the most refined perfume, which gives a good idea of its remarkable pecuniary importance.

Garum was consumed daily in Pompeii, and evidence of exceptional importance for an understanding of these processes has survived near the amphitheatre in the city that was buried by Vesuvius: An example of a combined urban



Ruins of a garum factory in Baelo Claudia in southern Spain. The vessels in the centre of the picture were filled with a mixture of fish, shellfish and salt, which was then allowed to ferment in the sun for a couple of months before the highly prized fish sauce was filtered off.

workshop/store, a type of building closely associated with the Roman world and with many cultures in Antiquity, where establishments facing out towards the street sold many of their own products, as was the Mediterranean way.

Pompeii’s “*garum shop*” had a unique architectural structure, inherited from buildings built in the previous centuries BC, and underwent various phases of remodelling until the final abandonment of its facilities at the time of the Vesuvian eruption on August 24th AD 79. The most important alterations appear to have been the final ones, following the earthquake of AD 62. What had until then been a house of a certain quality was sold to a new owner and became a small urban food-preserving factory.

The excavations in the *Bottega del Garum* in the 1960s, and further excavations undertaken between 2008 and 2012, show that the building had been divided into two parts. At the back were the areas where the food production and *garum* processing were executed, and in the front were the shops or *tabernae* that permitted access from the street so people could purchase the products. At the back of the building and in an L-shaped courtyard, the archaeological excavations revealed more than a hundred stacked amphorae of various origins and contents (wine from Campania and possibly oil in amphorae from North Africa), which were possibly used as ingredients in the fish processing. A set of almost a hundred amphorae stands out: These had been stacked upside



Amphorae containing fish remains, stacked ready for reuse. From Pompeii's "garum shop".

down, one on top of the other and at least three high and had been recently emptied when the volcanic eruption occurred. The amphorae bore painted inscriptions and had fish remains inside; they had been gathered together for future use. During the excavations, truncated amphorae containing residues of fruit and other products for the production of preserved goods were found. There were even parts of fishing equipment, for example the fully carbonised remains of a fish trap. It seems it was here that the fish were cleaned, prepared and then cooked, as well as where ingredients were mixed together and food prepared for further processing.

In the large, square garden, where the murals of the original building still survive, several large jars – each of more than 100 litres capacity – stand out. These jars were used for the manufacturing of *garum*. On lifting the lids, which some jars still had in situ, and looking inside, remains were found of the produc-



Pottery vessels, *dolia*, used for fermenting the local Pompeian fish sauce.

tion process: i.e. millions of small bones, some forming layers with the appearance of "sawdust", resulting from the compression of fish sauce after dehydration and the consequent loss of organic matter. These remains are exceptional; due to their fragility they are not usually found preserved on archaeological sites. Their study has allowed us to identify the type of *garum* produced in this area of Pompeii. The analyses were necessarily interdisciplinary, as specialists from various research fields worked together: biologists to classify the bones and determine the species and sizes of the fish, palynologists to identify the fossil pollen preserved in the sediment, allowing us to know which aromatic herbs had been used in the production of *garum*, and chemists to analyse the organic residues adhering to the walls of the vessels in order to identify ingredients that are not visible today. Thanks to these studies, we know that in AD 79 *garum* was being made in this factory using anchovies flavoured with various



Fishbones and other remains from the production of fish sauce are valuable sources of information about the various ingredients and the manufacturing process.

herbs and spices. The chemical analyses have revealed that the different jars contained the *garum* at various stages in its elaboration process and in one case held a product that was practically ready for sale. These containers, *dolia*, had been reutilised from a wine-production cellar, as indicated by the wine residues that impregnated their walls, which explains why they are of different shapes and sizes. They had to be bought from different owners or were second-hand pieces. It can therefore be inferred that this was not the famous *garum haimation*, made from blood, or *garum* of tuna, which was undoubtedly the most expensive, but a product of intermediate quality for which small fish were used. It is possible that kitchen stoves located nearby were used to accelerate the fermentation of the sauce by heating it. While the latrine must have been very frequently used for waste disposal. We also know that this space was used for the transfer of fish and molluscs, since remains of both have appeared in the canalised drains of the surroundings.



Small terracotta flask for *garum*, probably for table use. From Moregine, near Pompeii.



Mosaic depicting amphorae from Aulus Umbricius Scaurus' villa in Pompeii, with a depiction of the fine "*garum flos*, made from Scombridae, a Scaurus product".

Finds from the excavations in the front part of the *Bottega del Garum* include coins and stone weights for balances of various dimensions. From this we can infer that these rooms were used for both the large- and small-scale sale of *garum* and other marine products.

We know from a quantification of the production that the *Bottega del Garum* must have been a small preserving factory in the city, and that it would not have been able to meet the needs of the entire local population, estimated at several thousands. *Garum* was consumed almost on a daily basis, because it was used to flavour many different dishes, as reflected in the well-known recipe book written by Apicius, a chef in the time of Tiberius. *Garum* was found in almost every household, used in much the same way as we use salt or oil today.

The family of Umbricius Scaurus controlled Pompeii's fish-related businesses. We know from inscriptions that various members of this local lineage manufactured and made their living from the production of *garum*, *muria*, *liquamen* and other products: One of them, Aulus Umbricius Scaurus, had part of the *atrium* of his imposing mansion decorated with mosaics on which the jars that brought him so much fame and fortune were represented: the famous "flower of *garum*, made of Scombridae, a product of Scaurus". That is to say, the best *garum*, made from mackerel and similar fish, follows "the recipe" of Scaurus. It also came from their workshops, i.e. it was the original and genuine article, implying that it was possibly imitated by competitors who were not able to manufacture products of such high quality. This suggests that counterfeiting has been practised repeatedly throughout the history of humanity. In Pompeii, Herculaneum and Stabiae, and in the Campania region in general, hundreds of amphorae have been preserved or are seen as illustrations on mosaics. They have retained their painted inscriptions, usually in black ink, alluding to the products they contained. They illustrate very wide-ranging business activities, involving various commercial agents, and with numerous slaves and free men dependent on this prosperous Campania family.

But the Pompeii *garum* was not the most famous in the Roman Empire by far. Classical sources praise *garum hispanum*, amphorae of which have also been found in huge numbers in Pompeii. They show that the city's markets sold fish products from various Mediterranean sources, ranging from *Baetica* to the Orient, and to suit all pockets. It was probably the wealthy city magistrates who consumed tuna from Cádiz or Malaga, but most of the population would only have access to the *muria*, *altec* or *liuquamen*, manufactured by Scaurus or produced in small workshops such as the well-known "*garum* shop". It is difficult to understand the special qualities of a product without actually tasting it, and experimental archaeological studies have therefore been carried out with the *garum pompeianum*, which was reproduced by specialists in food technology. *Garum's* properties are very considerable, and its intense maritime flavour allows us to understand why it was so much in demand in Roman kitchens. Doctors currently forbid us to eat salty foods because the amount of salt in our diets exceeds what is considered healthy, but we cannot live without salt. And the way to eat salt in Antiquity was mostly through the consumption of salted and cooked products, the flavour of which was enhanced with *garum*. An age-old product consumed by both emperors and soldiers, by both rich and poor.