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## The fishing economy in ancient times: Goods and amphorae for the Adriatic trade

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## ABSTRACT

In Roman times fishing, fish farming and fish processing represented a relevant economic feature. Indeed, ancient sources describe several procedures for fish salting, for the preparation of fish sauce (*salsamenta*) and the different varieties of fish plates (*garum*, *allec*, *liquamen*). The latest archaeological investigation allowed to identify the most common container for the fish sauces transport in the Adriatic area, as in the western Mediterranean: here, indeed, a relevant number of amphorae were used to transport and trade fish sauces. In some cases, investigations show that amphorae already used for carrying wine were reused, marking the container with a writing (*titulus pictus*) which warned about the type of foodstuff transported, possibly not the one suggested by the shape of the amphora. Moreover, recent typological and epigraphical studies about the numerous *tituli picti* analysed, have allowed to identify the "small Adriatic fish amphora" as the principal container for trading the Adriatic fish sauces.

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## 1. The sauces and fish preserves production in Roman times

Fish sauces and salt fish, whole or cut, were very appreciated in antiquity. These products were prepared following a simple procedure, in particular areas where there was abundance of raw materials (Étienne and Mayet 2002, 2007). Fish farming left archaeological traces along the Black Sea coasts, on both the Mediterranean and Atlantic seaside of Roman Spain (Lagóstena Barrios 2001), in north Africa (Cerri 2007; Pons Pujol 2009), in Gaul, on western italic coasts and in Sicily (Botte 2009, 24–50).

On the other hand, along the Adriatic coasts, there are few archaeological traces which can be related with fish farm breeding (*piscinae* or *vivaria*) or fish manufacturing structures (*cetariae*): here, archaeological remains are less evident than in other Mediterranean regions, even if in the Adriatic area fish, salt and water necessary for the manufacturing process, are plenty present (Cetariae 2007; Busana et al. 2009).

Ancient authors, like *Marcus Manilius* in the *Astronomica* (dated to the augustan-tiberian period), *Pliny the Elder* in his *Naturalis Historia* (of claudio-neronian time) and the *Geoponica*, a farming essay written in the 10th century AD – but likely referred to the 6th century AD – describe the procedures for fish salting and fish sauces preparation in their different varieties.

*Garum* consists of fish entrails and fish scraps melted under the sun with salt; *liquamen* is the filtered liquid part of the *garum*; *allec* is a fish paste, *muria* is a brine fish (Étienne and Mayet 2002, Botte 2009, 14–21; Grainger, 2014).

## 2. The sauces and fish preserves amphorae in Adriatic basin

The sauces and fish preserves trade occurred by amphorae. Amphorae are the most important source of information held for the consumption of preserved fish and fish sauces. Their morphological and epigraphical analysis, and the paste's characteristics allowed to define their production area, period and the kind of foodstuffs contained inside the different typologies.

The frequent recovery of great quantities of amphorae in the Po Valley towns over the last decade, generally used to improve the terrain and drain the surface water, allowed us to identify, for different ranges of time, the provenance of the sauces, the fish preserving process and to understand the amount of trade connections.

The Dressel 7–11 are a group of amphorae coming from the betan coast *figlinae*, in particular from the region around Cadice and the territory of Algeciras and Malaga, generally dated between the half of 1st century BC and the 1st century AD (Beltrán Lloris 1970; Martín-Kilcher 2003; García Vargas and Bernal Casasola 2008; García Vargas 2009). Dressel 7–11 are the fish amphorae most documented in the north Adriatic regions. Their characteristics are a thick rim in form of a collar, an ovoid body or an elliptical profile, a cylinder-shaped neck, handles gently curved from the neck to

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Fig. 1. Dressel 7–11 amphora.



Fig. 2. The Adriatic fish amphora.

shoulder with one or more grooves and a solid spike at the base of the amphora (Fig. 1). The *tituli picti* printed on the neck or the shoulder was supposed to show the kind of foodstuff transported, generally the fish sauces. On Dressel 7 or 8 there is often the *titulus gari flos* or *gari scombri*, which guarantee the high quality of the *garum*, or the mackerel *garum*. *Liquamen*, *muria* and *cordula* suggest other qualities of fish sauces while, especially for Dressel 9, the *titulus limphatum* suggests a poor quality wine.

Dressel 7–11 amphorae are spread in western Mediterranean, and reach Germany and Britain. Moreover, even if in small quantities, are present in the Adriatic regions, in *Venetia* and in the eastern Mediterranean area (Rizzo 2014, 228–230).

The Adriatic fish amphorae are typical containers for fish sauce trade, particularly common in the *Venetia* region; the production area has not been identified yet, but its diffusion towards the



Fig. 3. Amphora from Vicenza and the internal remains.

Adriatic regions, the Cisalpine and the northern territories suggests an Adriatic origin. Adriatic fish amphorae have a 55–70 cm height, thin walls, short and slope rim, curve handles of rounded-section, ovoid or pear-shaped body and small conic knob (Fig. 2). *Tituli picti* referred to *liquamen* confirm these amphorae are the container for the Adriatic fish sauces, dated between the middle 1st century-beginning of the 2nd century AD and the 3rd century AD (Carre et al. 2009).

In order to complete the summary of the Adriatic amphorae used for fish sauces trade, it is necessary to mention that in some exceptional situations some amphorae, normally used to transport wine or oil, could be re-used to contain fish sauces.

Some Dressel 6A, generally used for wine, and Dressel 6B, generally used for oil, were re-used to transport *garum* or *allec*, *muria* and perhaps *liquamen*, and a *titulus pictus*, generally a *graffito*, on the neck or on the shoulder of the container was a kind of advise. Otherwise, food remains prove the unexpected and occasional use of the amphora for fish sauces, as in the case of Vicenza (Fig. 3). The Dressel 6A amphora's remains analysis revealed a mass of fish body and small size fish, like the *Spicara* or *Maena smaris*, chubs (*Leuciscus cephalus*) and crustaceans similar to prawns (*Palaemon*).

The remain of Vicenza's amphora is unusual because it is made of both sea fish and water fresh fish; thus, the fish farming could be located along the north Adriatic coast, in the lagoon area or on a Po Valley river's mouth (Mazzocchin 2013, 90–92).

### 3. The Adriatic fish sauces and preserved trade: the case of Padua

A number of Roman amphorae recovered in dated contexts of Padua, the ancient *Patavium*, analysed in last decades, allowed us to recognize four chronological phases (Cipriano and Mazzocchin 1998, 2000, 2011).

The first phase concern discoveries dated in late republican time (Fig. 4(a) and (b)); in this period the main foodstuff come from Italic regions (99,52%). *Patavium* supply mostly Adriatic wine, contain in Lamboglia 2 and Dressel 6A amphorae; tirrenic wine arrive in Dressel 1 and Dressel 2–4 amphorae (80,19%). Oil content, carried in ovoid and Dressel 6B amphorae, comes entirely from the north Adriatic regions (19,32%). The only foodstuff which comes from the Iberian area, more precisely from *Baetica*, is fish sauce (0,48%), content in Dressel 7–11 amphorae.

Instead, during the Augustan period (Fig. 5(a) and (b)), the amphorae came from Mediterranean areas, mainly the Aegean basin (22,98%), the north African coasts (1,29%) and the Iberian peninsula (2,27%), but the italic production is always and still well reported (72,49%). The different origins correspond to several variety of foodstuffs attested in *Patavium*: the majority of wine and oil comes from the Adriatic and north italic regions (37,86% wine and 34,63%

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