

Fish bones and amphorae: evidence for the production and consumption of salted fish products outside the Mediterranean region

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*Spetta ora ad altri di determinare, se pur sarà possibile, a quale specie di pesci appartengano quegli avanzi.*¹

Introduction

Early in the year 1878, during his excavation of the vast amphora deposit near the Castro Pretorio in Rome, H. Dressel was shown a crust adhering to the inner surface of an amphora sherd, in which he recognised the scales and bones of fish. Dressel was probably the first archaeologist not only to identify the amphorae used for the storage and transport of fish products, but also to recognise the archaeozoological remains of the commodities once stored in them. At the moment of his discovery, he made the prophetic remark that perhaps future research on the remains of these ancient fish might make it possible to identify the species found in association with the amphora sherds.

Now, more than a century later, Dressel's hope has been fulfilled, and a multidisciplinary research project, combining the study of artefacts and biological remains, has become possible. The production, trade and consumption of fish sauces (*garum*, *hallex*,² *liquamen*, *muria*) and salted fish (*salsamenta*³) in the Roman period are amply documented by literary and epigraphic sources;⁴ by the excavation and analysis of salting installations and salt production sites along the coasts of the Mediterranean and the Black Sea, as well as the Atlantic coasts of the Iberian peninsula and Gaul;⁵ by the nearly ubiquitous remains of the transport amphorae used in the trade;⁶ and, finally, by the archaeozoological analysis of the

1 Dressel 1879, 93: "It is up to others, whenever it may be possible, to determine to which species of fish these remains belong". Cf. also *CIL* XV 2 4757.

2 The term *hallex* is attested in a variety of spellings: *allex*, *hallec*, *allex* (Curtis 1991), *hallex* (*CIL* IV 5719), *alex* (Etienne and Mayet 2002) and *alec* (in a graffito on a *dolium* from Aardenburg, discussed below).

3 The term *salsamenta* is known only from ancient texts, not from *tituli picti*, and is used here to refer to salted fish, often of relatively large size, preserved whole or in cuts. In *salsamenta* the meat of the fish is still present as a relatively solid substance. Fish sauces, on the other hand, are liquids containing, among other ingredients, the dissolved soft parts (and sometimes also the skeletal elements) of mostly smaller fishes, or the dissolved soft parts or blood of larger fishes.

4 The ancient texts are collected by Curtis (1991); cf. also Grimal and Monod 1952 and Jardin 1961. For epigraphic texts, especially painted inscriptions and (rarely) *graffiti* on ceramics, see Dressel 1879; *CIL* IV suppl.; *CIL* XV 2; Colls *et al.* 1977; Liou and Marichal 1978; Liou 1987; Martin-Kilcher 1994; Liou and Rodríguez-Almeida 2000; Stuart and Bogaers 2001; Ehmig 2002 and 2003; Laubenheimer 2004.

5 Merlat 1957; Ponsich and Tarradell 1965; Sanquer and Galliou 1972; Galliou 1984; Pirazzoli 1987; Ponsich 1988; Curtis 1991; Etienne and Mayet 2002; Zimmermann 2003; Bekker-Nielsen 2005; Wilson 2006; Lagóstena, Bernal and Arévalo 2007; Slim *et al.* 2007; Driard 2008.

6 *CIL* XV 2; Zevi 1966; Beltrán Lloris 1970; Peacock 1974; Manacorda 1977; van der Werff 1984; Sealey 1985; Peacock and Williams 1986; Brentchaloff 1988; Desbat and Martin-Kilcher 1989; Laubenheimer 1990; Martin-Kilcher 1990; Dangréaux *et al.* 1992; Laubenheimer, Gébara and Béraud 1992; Martin-Kilcher 1994; Baudoux 1996; Desbat and Dangréaux 1997; García Vargas 1998; Ehmig 2003; Monsieur 2005.