



POSTER

MICROBIOLOGICAL AND CHEMICAL ASSESSMENT OF A TRADITIONAL SEMI-PRESERVED FISH FROM PONZA ISLAND

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Aim. Swordfish roe preserved in oil is a traditional agri-food product (TAP) obtained from the ovaries of *Xiphias gladius* through boiling, salting and preservation in vegetable oil. Despite its increasing gastronomic interest, scientific information on its characterization and secondary shelf-life remains limited. This study evaluated the effect of ovarian maturity on the quality of swordfish roe preserved in oil and on its secondary shelf-life after package opening by comparing products obtained from mature (large) and immature (small) roe.

Methods. Specimens of *Xiphias gladius* were caught between June and July in the coastal waters of Ponza Island (Lazio Region - Italy) using a traditional longline (coffa). Ovaries were removed, transported on ice to a local processing facility, washed and boiled for 3 h in brine (70 g salt/kg in 6 L of water). After cooling and drying, the ovarian membrane was removed, and the roe was classified by size (small or large), packed in glass jars, covered with extra virgin olive oil and heat-treated by boiling for 1 h. Raw swordfish ovaries (OV) and three commercial batches of semi-preserved roe obtained with small (S1), mixed (S2) and large (S3) eggs were analysed. Chemical (moisture, protein, lipid, salt and fatty acids) and microbiological analyses (total viable count, total halophilic aerobic flora at 7 and 30 °C, Enterobacteriaceae, coliforms, lactic acid bacteria, sulphite-reducing anaerobes, *Escherichia coli*, *Pseudomonas* spp., yeasts and molds) were performed on OV and finished products throughout secondary shelf-life. Quantitative enumeration of *Staphylococcus* spp. was performed on the OV and during the secondary shelf-life, whereas *Vibrio* spp. was investigated only in the OV by a qualitative presence/absence assay. Glass jars were opened, stored at 4±1 °C under simulated domestic refrigeration conditions, and analyzed after

0, 7, and 15 days.

Results. Chemical composition was influenced by both roe maturity and processing. S3 products exhibited higher lipid and lower protein contents than S1. Compared with OV, semi-preserved products showed lower moisture levels due to water loss during processing and a relative increase in protein and lipid contents following the addition of extra virgin olive oil. Processing also modified the fatty acid profile, with oleic acid becoming the predominant fatty acid in semi-preserved products, whereas docosahexaenoic acid remained the major polyunsaturated fatty acid in OV. After 15 days of refrigerated storage, only a limited increase in the detected microflora was observed, with no substantial differences among S1, S2 and S3. Enterobacteriaceae and coliforms reached maximum levels of 3.8 and 4.0 Log CFU/g, respectively, from initial values of about 3 Log CFU/g, indicating limited growth during shelf-life. Specific spoilage microorganisms, including *Pseudomonas* spp. and molds, appeared only at the end of storage (about 2 Log CFU/g), whereas *E. coli* and yeasts were never detected. *Staphylococcus* spp. was not detected, and *Vibrio* spp. was absent in the OV. These findings support a secondary shelf-life of up to 15 days.

Conclusions. Roe maturity affects the composition of semi-preserved swordfish roe but does not influence its microbiological stability after opening. These findings provide a scientific basis for defining the secondary shelf life of this TAP and support the validation of practical storage recommendations for consumers and food business operators, contributing to both product safety and the preservation of its characteristics.