

Title Effect of different treatments on the quality of cuttlefish (*Sepia officinalis* L.) viscera
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Abstract

The effects of different preservation times (cuttlefish auction), transformation factory treatments, different times of frozen storage at $-20\text{ }^{\circ}\text{C}$ and various defrosting temperatures were investigated with respect to the chemical changes of the viscera of cuttlefish (*Sepia officinalis*). During auction storage, pH and TCA (trichloroacetic acid)-soluble protein concentration decreased, whereas intracellular (cathepsins, total acid proteases and acid phosphatases) and extracellular (amylase, chymotrypsin, trypsin and total alkaline proteases) enzymatic activities increased. In cuttlefish transformation factories, pH value and TCA-soluble protein concentration increased. In transformation factory conditions, lipase and amylase levels varied, while other assayed enzymes were stable. Moreover, during transformation factory treatment, the molecular weight of proteins/peptides decreased and the oil composition evolution reflected hydrolysis of cuttlefish viscera. Thus, cuttlefish viscera fatty acid composition differed between fresh viscera and factory viscera. Despite changes in the fatty acid chain composition during factory transformation, the percentage of poly-unsaturated fatty acids remained high. Frozen storage implied major changes in viscera quality such as an increase in pH and a decrease in the quantity of high molecular weight protein. Moreover, the higher the defrosting temperature, the higher was the pH. During storage at $-20\text{ }^{\circ}\text{C}$ the quantities of proteins, carbohydrates and lipids decreased slightly.