EFFECT OF DIFFERENT PRESERVATION METHODS IN THE FATTY ACID PROFILE OF THE BIVALVE CALLISTA CHIONE

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The brown Venus \textit{Callista chione} (L. 1758) is a commercially important bivalve mollusc, naturally occurring in Mediterranean estuarine waters. Dense beds of the animal may develop in productive areas. Like other molluscan shellfish, \textit{C. chione} are distributed live and most frequently eaten raw. So far, most studies have focused on biological behaviour and growth rate, population dynamics in relation to harvesting area, and the effect of dredge design on the size and quality of the catch. Apparently, no study has examined compositional aspects or the influence that processing and storage may have on nutritionally important constituents of the bivalve.

The aim of the present study was to characterize the fatty acid profile of raw \textit{C. chione} and to investigate changes in marinated and vacuum-packed, frozen meats, over a storage period of six months. Live specimens of farmed \textit{C. chione} were processed in boiling (100\degree C) water for 4 min and the cooked meats were either vacuum-packed in plastic bags and frozen (−18\degree C) or used for preparing a marinade semi-preserve that was packed in glass jars and stored at 4\degree C. Total lipids extracted (Bligh & Dyer) \cite{1} from the raw and boiled meats, as well as from samples of the frozen and marinated products at 4 and 6 months of storage, were analysed by gas chromatography \cite{2}.

Data from the GC-FID analysis revealed the presence of 40 fatty acids (FA). Saturated fatty acids (SFA) were predominant, followed by polyunsaturated (PUFA) and monounsaturated (MUFA) fatty acids. The major SFA identified in raw and processed \textit{C. chione} were palmitic (C16:0), myristic (C14:0) and stearic (C18:0). Oleic (C18:1 \textit{ω}-9) and palmitoleic (C16:1 \textit{ω}-7) acids predominated among MUFA, while eicosapentaenoic (C20:5 \textit{ω}-3) and docosahexaenoic (C22:6 \textit{ω}-3) were the major PUFA. Frozen storage caused a significant (\textit{P}< 0.05) increase in the \textit{ω}-3/\textit{ω}-6 ratio, which was accompanied by a decrease in the MUFA/SFA ratio. Significant changes in the fatty acid profile were induced also by the marinating process, which appeared to reverse the PUFA/MUFA ratio. However, the hypocholesterolaemic/ hypercholesterolaemic fatty acids (h/H) and PUFA/SFA ratios, as well as the peroxidisability (PI), the atherogenic (AI) and thrombogenic (TI) indices did not vary significantly between samples. Thus, it may be assumed that marinating and freezing have no adverse effect on the fatty acid profile of \textit{C. chione} lipid and the potential health benefits arising there from.

KEYWORDS: \textit{Callistachione}; bivalve mollusk; food preservation; lipids; fatty acids.

REFERENCES: