



Fatty acid and fat soluble vitamins composition of raw and cooked Black Sea horse mackerel

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Abstract. The fat soluble vitamins, as well as n3 and n6 fatty acids (FA) are essential compounds of fish lipids and exclusively provided by the diet. Fish is sometimes eaten raw, but it is usually thermal processed before consumption. Temperature processing of fish tissue enhances its taste, inactivates pathogenic microorganisms and increases its shelf life. The fat soluble vitamins (vitamins A, D₃ and E) and fatty acids are considered to be susceptible to oxidation during heating (cooking) process. The aim of the present study was to evaluate the effect of steaming (10 min at 90°C) and frying (5 min on the each side with sunflower oil) on fat soluble vitamins and fatty acids composition in Horse mackerel (*Trahurus mediterraneus*) fish fillets. Vitamins A, D₃ and E were analyzed simultaneously using RP-HPLC. The fatty acid composition was analyzed by GC-MS. The amounts of vitamin A (retinol) in cooked fish fillets (for both heat treatments) decreased significantly, compared to their content in the raw samples. In contrast vitamin D₃ (cholecalciferol) content affects only by steaming, while changes on vitamin E (alpha-tocopherol) was observed solely after frying process. The highest content of monounsaturated fatty acids (MUFA) were observed after steaming, whereas fried samples presented higher values of polyunsaturated fatty acids (PUFA) due to significant increase in linoleic acid (C18:2n6). During steaming did not reduce significant n3 and n6 PUFA levels, while frying caused a large reduction of n3 PUFAs. The ratio of n3/n6 was markedly lower in fried samples than in raw and steamed mackerel. In conclusion the Black Sea Horse Mackerel is a good source of vitamin D₃, vitamin E and n3 PUFAs. After steaming and frying process there were minimum losses in the contents of cholecalciferol and alpha-tocopherol, while retinol was reduced nearly a half. The process of frying affects most significantly three fatty acids groups, whereas after steaming was observed little influence on fatty acids profile.

Keywords: *Trahurus mediterraneus*, steaming, frying, vitamins, fatty acids, human health
