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Fat soluble vitamins and fatty acid composition of wild Black sea mussel, rapana and shrimp

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Abstract Many studies suggest that marine molluscs are one of the most important dietary sources of fat soluble vitamins (E, D_3 and A) and essential fatty acids (FA). The most commercially important species from the Bulgarian Black Sea are the Black mussel, rapana and shrimp. There is scarce information in the scientific literature about fat soluble vitamins and FA composition of these Black Sea molluscs. The aims of the present study are to determine and compare fat soluble vitamins content as well as relative daily intake, FA composition and atherogenic index (IA), thrombogenicity index (IT) and flesh-lipid quality index (FLQ) in wild Black Sea mussel (*Mytilus galloprovincialis*), rapana (*Rapana venosa*) and shrimp (*Crangon crangon*). Fat soluble vitamins were analysed simultaneously using RP-HPLC system. The FA profile was analysed by GC-MS. All of the analysed samples presented significant amounts of vitamin E, followed by vitamin A and D_3. Black Sea molluscs are excellent sources of fat soluble vitamins, especially for vitamin D_3 - one survey provides more than 100% of the RDI established in Bulgaria. The FA composition of total lipids showed significant differences and the present study revealed that SFA content was significantly higher than MUFA ($p<0.001$) and PUFA ($p<0.001$) (SFA>PUFA>MUFA) in shrimp and mussel whereas rapana showed opposite trends (PUFA>SFA>MUFA). The omega6/omega3 and PUFA/SFA ratios of the analysed species were greater than the FAO/WHO recommendations.

Keywords: Mytilus sp., Rapana sp., Crangon sp., fat soluble vitamins, fatty acids, Bulgarian Black Sea coast

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