

Fatty acids composition in South African freshwater fish as indicators of food quality

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Abstract

Lipid classes and fatty acid composition of three commercially important freshwater fish species *Oreochromis mossambicus* (Mozambique tilapia), *Clarias gariepinus* (African catfish) and *Cyprinus carpio* (carp) obtained from an aquaculture, different river systems and fish markets from different provinces in South Africa were investigated. Fatty acids were extracted from the fish fillets through the Folch extraction method (using chloroform: methanol at the ratio of 2:1). Generally, tilapia fish species was found to be the richest in fatty acid composition. In all fish species analysed, palmitic acid (16:0) was found to be the most abundant fatty acid ranging from 18.24 to 21.84%. Appreciable quantities of essential polyunsaturated fatty acid such as docosahexaenoic (DHA) (22:6 n-3, 3.92 to 6.16%), eicosapentaenoic acid (EPA) (20:5 n-3, 1.91 to 2.92%) and arachidonic acid (20:4 n-6, 7.19 to 8.50%) were also found. Observations show that fish species obtained from Gauteng Province are richer in fatty acids compared to those in Limpopo Province. The study points out that all fish species investigated contain appreciable levels of Omega-3 (n-3) polyunsaturated fatty acids (PUFA) and are therefore suitable for an unsaturated low-fat diet. This is important especially for poor communities who cannot afford to get a balanced diet, rich in some essential fatty acids. Therefore, it is important to determine the nutritional value of local fish, since it significantly contribute to a healthy diet in rural communities.

Keywords: fatty acid composition, lipids, freshwater fish, Omega -3 and Omega-6, polyunsaturated fatty acids, EPA, DHA