

THE INFLUENCE OF THERMAL FRYING TREATMENTS ON THE NUTRITIONAL AND HEALTH PROPERTIES OF FISH MEAT

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Abstract

Fish meat is a distinct food in human diets, as it is highly digestible and has the ability to provide a wide range of micronutrients, vitamins, amino acids and fatty acids in considerable quantities.

In the last period of time, especially, in accordance with the studies on the specific nutritional factors of fish meat, the interest in the consumption of this aquatic product has increased, due to the determination and evaluation of the high content of PUFA omega-3 fatty acids, with a significant role for health, in especially eicosapentaenoic acid (20:5n-3, EPA) and docosahexaenoic acid (22:6n-3, DHA). Long-chain n-3 polyunsaturated fatty acids, including α -linolenic acid (ALA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), are particularly important for human health, having been certified to protect the human body against cardiovascular disease, accelerated neurodegeneration and to reduce the inflammatory syndrome.

In addition to playing an important role in cardiovascular and inflammatory diseases, essential fatty acids are vital in the development of neurons in fetuses and infants, and ensure the control of glycolytic metabolism.

However, fish meat and fish meat products are by no means risk-free. Thus, a careful evaluation of the provenance and existing trophic chains in the geographical areas of origin of the fish is required, as well as the analysis of the impact generated by the meat preservation methods and procedures.

Frying, for example, is one of the complex processes that can significantly change the nutritional composition of the fried food product. Among the processing techniques, food frying has gained more and more acceptance, all over the world, but a whole series of research they highlight multiple disadvantages, both from a nutritional and physiological point of view.

During frying, the fat breaks down and many reactions occur that result in numerous structural transformations recorded by the fatty acids, namely the formation of trans fatty acids.

Conclusively, following the analysis of the obtained experimental data, it is highlighted that the proportion of saturated fatty acids (SFA) in raw fish muscle was lower (26.01%) compared to fried fish muscle (29.05%), the ratio n-3/ n-6 changed after frying (0.44, in raw meat and 0.29 in fried meat), the Atherogenicity Index varied between 0.38, in raw meat compared to 0.85 in fried meat, and the Thrombogenicity Index was 0.38, in raw meat and 0.98 in fried meat, which shows that undesirable reactions occurred in fried fish muscle. The hypocholesterolemic/hypercholesterolemic ratio was relatively similar in raw muscle (2.68) and fried (2.13), but the total level of unsaturated fatty acids (UFA) in raw fish muscle (81.97%) was lower than that of fried fish (82.59 %). A higher percentage of trans fatty acids was identified in fried fish compared to raw fish. Frying carp meat considerably changed the fatty acid composition of fish meat, increasing the proportion of saturated fatty acids and decreasing the proportion of unsaturated fatty acids.

Key words: *fish meat, thermal treatments, health properties, nutritional indices*