

Poster 34

Can culinary processing impact the lipid content and fatty acid profile of turbot (*Scophthalmus maximus*)?

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Abstract

Background: Fish are the main source of omega-3 long-chain polyunsaturated fatty acids (PUFAs), such as EPA and DHA, which are known to be beneficial for human health [1,2]. However, thermal culinary processing may cause lipid oxidation and reduce its nutritional value [1]. **Objective:** This study aims to compare the lipid nutritional value of turbot (*Scophthalmus maximus*) muscle before and after culinary processing, including traditional oven and grilled, with and without olive oil. **Methods:** The impact of muscle location (ventral and dorsal), and the skin presence on the fish's lipid content and fatty acid (FA) profile was also evaluated. Total lipids were quantified gravimetrically by Folch methodology and the FA was analyzed by gas chromatography. **Results:** Results showed that skin presence did not significantly impact lipid content or FA profile, but the ventral muscle had a significantly higher total lipid content than the dorsal muscle, irrespective of the culinary processing or skin presence. The dorsal section had significantly higher relative concentrations of C20:4n-6, DHA and EPA+DHA, while the ventral section was richer in C14, C16:1n-7, C18:3n-3, and n-6/n-3 ratio. But the deposition of EPA (mg/100g), was greater in the ventral muscle section. The fatty acid profile of processed samples did not differ significantly from fresh muscle. However, the application of extra virgin olive oil increased MUFA and decreased PUFA levels in processed samples. A significant interaction between culinary processing, skin and oil presence was observed in n-3, n-6/n-3. The n-3 FA were significantly higher in muscle processed without oil resulting in the lowest n-6/n-3 ratio. **Conclusions:** Overall, the nutritional value of all muscle samples is very high irrespectively of culinary processing and all provided consumers with more than 500mg of EPA+DHA/100g, complying with EFSA recommended daily intakes to prevent cardiovascular diseases in adults [3].

Keywords: culinary processing; fatty acid profile; PUFA; lipid oxidation; turbot

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