



46th WEFTA
Split, Croatia /12-14 Oct 2016



Content of minor fish oil components of different fish species and processing technologies

Sybille Merkle^a, Editha Giese^a, Sascha Rohn^b, Horst Karl^c, Ines Lehmann^c, Andreas Wohltmann^d, Jan Fritsche^{a,c}

^aFaculty of Life Sciences, Food Science, Hamburg University of Applied Sciences, Hamburg, Germany; ^bUniversity of Hamburg, Hamburg School of Food Science, Grindelallee 117, 20146 Hamburg; ^cDepartment of Safety and Quality of Milk and Fish Products, Max Rubner-Institut, Federal Research Institute of Nutrition and Food Hamburg, Hamburg, Germany; ^dLIPROMAR GmbH, Cuxhaven, Germany

One of the main components responsible for the health benefits resulting from fish consumption are n-3 polyunsaturated fatty acids (n-3 PUFA), with focus on EPA and DHA. Encapsulated fish oil or n-3 PUFA concentrates produced from fish oil are practical alternatives for a desirable increased intake of these essential minor components. For producing fish oil intended for human consumption, essential processing steps including oil extraction, refining, purification, and enrichment are usually applied. Refining of crude fish oil is necessary to remove environmental contaminants such as dibenzo-p-dioxins, dibenzofurans (PCDD/Fs), dioxin-like polychlorinated biphenyls (dl-PCBs) and non-dioxin-like PCBs (ndl-PCBs) within legal limits and for enhancing shelf-life. However, during the deodorization of fish oil, process contaminants such as 2-monochloropropane-1,3-diol (2-MCPD) and 3-monochloropropane-1,2-diol (3-MCPD) esters and glycidyl esters may be formed.

The aim of the present study was to provide a comprehensive overview on the content of selected environmental and process contaminants in fish oils deriving from different fish species treated with different processing technologies. Furthermore concentrations of EPA, DHA and n-3 PUFA have been analyzed in different fish oil products.

The contents of PCDD/Fs, dl-PCBs and ndl-PCBs are well below the legal limits for food grade fish oil in analyzed crude fish oils extracted from farmed fish, but not in fish oil extracted from captured fish. A reduction in the amount of PCDD/F and dl-PCBs could be identified by filtration with active carbon. 2- and 3-MCPD ester and glycidyl ester contents are considerably higher in the investigated refined compared to the crude fish oils. Additionally, the comparison of analyzed with labeled concentrations of EPA, DHA and n-3 PUFA values showed satisfying compliance, not confirming frequent deviations from labeled concentrations as stated in earlier reports.

The results of the analyzed minor components in different fish species relating to their processing technologies will be presented.