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Muhammad Taher

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Editor

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CHAPTER 4

PUFA IN FISH: EXTRACTION AND FRACTIONATION METHODS

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Fish oils are an important dietary source of PUFA which is rich in EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). There is a growing interest in rendering and refining fish oil for human consumption due to its high nutritional value. The conventional methods for extraction and purification of fish oil (PUFA) having the disadvantages including high temperature processing and employing toxic or flammable solvents. Therefore, extraction of fish oil using supercritical fluids as solvents, especially carbon dioxide (CO_2), could be a good solution of separation problems which uses low temperature and pressure. The main advantages of using this technology over the traditional fish oil purification steps, are that it decreases the number of steps needed to refine fish oils as well as reduces the use of chemicals during processing. PUFA contents in different marine fishes and general methods for their extraction and fractionation are covered in this article. Emphasis is given to the fractionations of EPA and DHA by means of supercritical fluid extractions (SFE). The advantages of SFE compared to conventional methods are also discussed.

4.1 Introduction

Fish oils are the most important natural source of long-chain PUFA; especially those are omega-3 fatty acids family, EPA and DHA. PUFA are known as essential fatty acids as they cannot be synthesized *de-novo* and must be obtained from the diet (Shahidi, 2001). The importance of fish oil PUFA in human health and disease prevention is well recognized. Many