

Fractionation of Fish Oil using Supercritical Carbon Dioxide

Ana Paula A. Corrêa^a, Lyreny A. G. Gonçalves^b, Fernando A. Cabral^{a}*

^aLASEFI - Department of Food Engineering (DEA), ^b Department of Food Technology (DTA)
Faculty of Food Engineering (FEA), State University of Campinas -UNICAMP,
P.O.Box. 6121, CEP: 13083-970, Barão Geraldo, Campinas, SP, Brazil,
cabral@ceres.fea.unicamp.br, fax: 55 19 37884027

Keywords: Omega-3, supercritical carbon dioxide, fish oil, fractionation

The omega-3 (n-3) fatty acids are essential for normal growth and development and may play an important role in the prevention and treatment of coronary artery disease, hypertension, diabetes, arthritis, other inflammatory and autoimmune disorder and cancer. Much nutritional interest has been focused on edible oils of marine origins because of their high content of n-3 fatty acids. So, the production of fish oil n-3 fatty acid concentrates continues to be a topic of interest for both the pharmaceutical and health food industries.

In the present work, fish oil fractionation with supercritical carbon dioxide in different conditions of temperature and pressure was studied.

A Known amount of fish oil was put inside a glass spheres packed column. The supercritical carbon dioxide was contacted with lipids in a flow-through system, and flashed to atmospheric pressure through a pressure reduction valve. All the experimental system is immersed in water bath to

ensure isothermal conditions. The oil present in the light phase was trapped in a cooled Erlenmeyer flask and its fatty acids composition was measured by a Split Splitless gas chromatography.

The extract obtained (light phase) showed different compositions in polyunsaturated fatty acids when compared with heavy phase. So, it's possible to have triglycerides fish oil concentrated rich in polyunsaturated fatty acids, including n-3.