

## Concentration of *n*-3 PUFA from cod liver oil

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The fish oils have been found to be the source of *n*-3 Polyunsaturated Fatty Acids (PUFA) in form of triacylglycerols. Apart from direct consumption the fish oils can also be the source of acyl donors in the process of enzymatic enrichment of phospholipids with these essential fatty acids. Taking into consideration that in enzymatic reactions large excess of fatty acids is used to achieve the successful incorporation into phospholipids, the content of PUFA in native fish oils too low and need to be increased. The methods for concentration *n*-3 PUFA include adsorption chromatography, fractional or molecular distillation, low-temperature crystallization, supercritical fluid extraction or enzymatic hydrolysis [1,2]. The simplest and most effective technique is urea complexation [3]. This method involves the alkaline hydrolysis of oil followed by mixing of free fatty acids with the solution of urea. The saturated and monounsaturated fatty acids are complexed by urea, crystallize out on cooling and may be separated by filtration. The liquid fraction is *n*-3 PUFA concentrate.

In this communication optimization of *n*-3 PUFA concentration of cod liver oil by urea complexation is reported. The native cod liver oil contains two nutritionally important *n*-3 PUFA: docosahexaenoic acid (DHA) – 11% and eicosapentaenoic acid (EPA) – 9%. Changing different factors i.a. urea/fatty acids ratio and crystallization temperature we produced the concentrate with 60-70% content of *n*-3 PUFA which can be directly used in the process of phospholipids acydolysis.

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[1] Shahidi F., Wanasundara U.N. *Food Sc Technol*, 1998, 9, 230-240.

[2] Wanasundara U.N., Shahidi F. *J Am Oil Chem Soc*, 1998, 75, 945-951.

[3] Wanasundara U.N., Shahidi F. *Food Chem*, 1999, 41-49.