

Enzymatic Interesterification of Rapeseed and Fish Oil Mixtures' Using Biocatalysts Lipozyme[®] RM IM

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The aim of the work was the investigations on the using of the fish oil (D) in the rapeseed oil (R) modification. Incorporation of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) from fish oils into rapeseed oil would provide an unique specialty oil for specific nutritional and clinical needs. In the work used two raw materials with a different characteristics of fatty acids. There were rapeseed oil contained about 90% unsaturated fatty acids, C 18 group, and fish oil contained long chain polyunsaturated fatty acids EPA (C 20:5) – 30%, DHA (C 22:6) – 20%. The interesterification of these oils mixtures, in different proportions, with the biocatalyst Lipozyme[®] RM IM from *Rhizomucor miehei* was carried out. The catalyst was specific in relation to ester bonds in *sn*-1,3 positions of the triacylglycerol molecules. The investigations in model system in batch reactor with stirrer and without solvent on the laboratory scale was carried out. The parameters of reaction were: temperature - 60 °C, time – 6 h, water content – 2,4%. The following analytical tests were selected: determination of the composition of fatty acids by GLC, determination of the composition of fatty acids in the *2-position* of the triacylglycerols molecules (TAG) and with Grignard's analytical reagent, determination of the composition of the interesterified product by means of the column chromatography, determination of the acid value. The product obtained consists of mainly triacylglycerols 85,1% (TAG), diacylglycerols 5,9% (DAG), monoacylglycerols 2,9% (MAG) and free fatty acids 5,8% (FFA). It was found out that the fraction of TAGs in the products increased with the reduction of a water content, while the content of free fatty acids and partial acylglycerols decreased. The results of the work indicated on partially changes of fatty acids in external positions *sn*-1,3 of TAG and introducing (incorporation) in this place polyenic acids EPA and DHA.