

SALMON AND HERRING FISH OIL HYDROLYSIS WITH IMMOBILIZED *CANDIDA* *ANTARCTICA* LIPASE-B

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ABSTRACT

The present paper investigates the comparative hydrolysis of salmon and herring fish oils with immobilized *Candida antarctica* lipase-B (CAL-B) to release free fatty acids. The physiochemical characterization of two fish oils has been studied using High Performance Liquid Chromatography (HPLC), Gas Chromatography (GC), ¹H Nuclear Magnetic Resonance (NMR) and Fourier Transform Infrared Spectroscopy to compare their chemical composition. The kinetic parameters have been determined using short term and long term hydrolysis to fit experimental data assuming no inhibition and product inhibition respectively in form of different kinetic models. The reaction inhibition due to formation of products was found to be negligible for hydrolysis of fish oils with immobilized CAL-B lipase. The activation energy was investigated and results indicate that the reaction was kinetically controlled and effect of diffusion resistances was negligible. The activity retention for immobilized CAL-B after five cycles of repeated use for hydrolysis of salmon and herring fish oils was found to be 22.3 and 18.6 % respectively.

KEYWORDS: Activation Energy, Free Fatty Acids, Kinetics, Non-Selective Hydrolysis, Reusability Study