

HYDROLYSIS OF TUNA FISH OIL USING *CANDIDA RUGOSA* LIPASE FOR PRODUCING FATTY ACIDS CONTAINING DHA

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ABSTRACT

The present paper investigates the enzymatic hydrolysis of tuna fish oil with *Candida rugosa* lipase (CRL) in biphasic solvent system for the production of free fatty acids (FFAs). Effect of reaction parameters were studied by varying suitable reaction conditions such as pH, temperature, agitation speed, water and solvent concentrations. When the reaction was carried out for 24 h, 86.5% hydrolysis was achieved. For hydrolysis kinetics, the model given by Prazeres et al., [1] with second product inhibition was used. The kinetic model was fitted using MATLAB® to determine the best kinetic parameters. R^2 and root mean square error (RMSE) were found to be 0.961 and 56.7, respectively. The average value of kinetic constants using the Prazeres model were estimated as $K_M = 4.26 \mu \text{ moles FFA/ml}$, $K_{i1} = 6.0 \times 10^{-6} \mu \text{ moles FFA/ mg enzyme}\cdot\text{h}$, $K_{i2} = 0.042 \mu \text{ moles FFA/ mg enzyme}\cdot\text{h}$ and $K_2 = 122.3 \mu \text{ moles FFA/ mg enzyme}\cdot\text{h}$.

KEYWORDS: Biphasic Solvent, *Candida rugosa* Lipase, Hydrolysis, Tuna Fish Oil