

Enzymatic synthesis of phenyl fatty hydroxamic acids from canola and palm oils.

ABSTRACT

Phenyl fatty hydroxamic acids (PFHAs) were synthesized from canola or palm oils and phenyl hydroxylamine (FHA) catalyzed by Lipozyme TL IM or RM IM. The reaction was carried out by shaking the reaction mixture at 120 rpm. The optimization was carried out by changing the reaction parameters, namely; temperature, organic solvent, amount and kind of enzyme, period of reaction and the mol ratio of reactants. The highest conversion was obtained when the reaction was carried out under the following conditions: temperature, 39°C; solvent, petroleum ether; kind and amount of lipase, 80 mg Lipozyme TL IM/mmol oil; reaction period, 72 h and FHA-oil ratio, 7.3 mmol FHA/ mmol oil. The highest conversion percentage of phenyl hydroxylaminolysis of the Ladan and Kristal brands commercial canola oils, palm stearin and palm kernel oils were 55.6, 52.2, 51.4 and 49.7 %, respectively.

Keyword: Canola oil; Enzymatic reaction; Palm oil; Phenyl fatty hydroxamic acids.