

Enzymatic synthesis of fatty hydroxamic acid derivatives based on palm kernel oil.

ABSTRACT

Fatty hydroxamic acid derivatives were synthesized using Lipozyme TL IM catalyst at biphasic medium as the palm kernel oil was dissolved in hexane and hydroxylamine derivatives were dissolved in water: (1) N-methyl fatty hydroxamic acids (MFHAs); (2) N-isopropyl fatty hydroxamic acids (IPFHAs) and (3) N-benzyl fatty hydroxamic acids (BFHAs) were synthesized by reaction of palm kernel oil and N-methyl hydroxylamine (N-MHA), N-isopropyl hydroxylamine (N-IPHA) and N-benzyl hydroxylamine (N-BHA), respectively. Finally, after separation the products were characterized by color testing, elemental analysis, FT-IR and ¹H-NMR spectroscopy. For achieving the highest conversion percentage of product the optimum molar ratio of reactants was obtained by changing the ratio of reactants while other reaction parameters were kept constant. For synthesis of MFHAs the optimum mol ratio of N-MHA/palm kernel oil = 6/1 and the highest conversion was 77.8%, for synthesis of IPFHAs the optimum mol ratio of N-IPHA/palm kernel oil = 7/1 and the highest conversion was 65.4% and for synthesis of BFHAs the optimum mol ratio of N-BHA/palm kernel oil = 7/1 and the highest conversion was 61.7%.

Keyword: Benzyl fatty hydroxamic acids; Methyl fatty hydroxamic acids; Isopropyl fatty hydroxamic acids; Enzymatic reaction; Palm kernel oil; Lipozyme.