Enzymatic synthesis of fatty esters by alkylated lipase

ABSTRACT

Lipase from Candida rugosa was chemically modified by reductive alkylation with aldehydes of various chain lengths. The derivatised lipases showed a higher esterification activity compared to native enzyme. The degree of activity enhancement depended on the type and molecular weight of the modifiers used and the degree of modification of the enzyme. They exhibited higher activities in non-polar than in polar solvents. The optimum esterification temperature and preference of fatty acids as acyl donors of the derivatised lipases were very similar to those of native enzyme. Lipase derivatised with dodecyldehyde was more thermostable than those modified with acetaldehyde. Alkylated lipases are relatively more stable in organic solvents than the native enzyme.

Keyword: Reductive alkylation; Esterification; Selectivity; Stability