

Synthesis of medium-chain glycerides using lipase from *Candida rugosa*

ABSTRACT

Enzymatic synthesis of medium-chain glycerides (MCG) from capric acid and glycerol was studied using lipase from *Candida rugosa*. The effects of various reaction parameters such as time, molar ratio of substrates (mmol capric acid/mmol glycerol), amount of lipase, type of organic solvents, and initial water activity (a_w) were studied. The best conditions tested for MCG synthesis at 37°C were, respectively, time, 24 h; molar ratio of substrates, 2.5; and amount of lipase, 100.0 mg. The use of organic solvents greatly influenced the activity of lipase in the synthesis of MCG. Generally, activity of lipase was high in nonpolar solvents with log P values from 3.50 to 4.50, where P is the partition coefficient between water and 1-octanol. The enzymatic synthesis of MCG was preferably carried out at an initial a_w of 0.328, which resulted in maximal yield. Analysis of the products of reaction using gas chromatography showed that lipase from *Candida rugosa* seemed to produce more dicaprin and tricaprin than monocaprin.

Keyword: Esterification; Lipase; Medium-chain glycerides; Solvents; Water activity