

BIOTECHNOLOGY & BIOENGINEERING

脂肪酶促乌柏脂组分甘油解及其反应机理研究
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摘要 Glycerolysis of Chinese vegetable tallow (CVT) fraction was investigated using a 1,3-specific lipase from *Rhizopus arrhizus* as catalyst. Based upon a binary gradient HPLC with an evaporative light-scattering detector (ELSD), the contents of free fatty acids (FFA), monoglycerides (MG), diglycerides (DG) and triglycerides (TG) with their positional isomers during the glycerolysis were determined. The effects of water content and the ratio of glycerol to oil on the product distribution of glycerolysis were studied. Under the optimum reactant conditions: 250 units lipase per gram oil at 37°C with 1:2 molar ratio of oil to glycerol in a solvent-free system, after 24 h reaction, the product consisted of 7.2% TG, 25.6% MG, 56.1% DG and 4.9% FFA (all by mass). Furthermore, the mechanism of glycerolysis was discussed in detail.

关键词 脂肪酶, 乌柏脂, 甘油, 反应机理, 植物油

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Enzymatic Glycerolysis of Chinese Vegetable Tallow Fraction by Lipase and Study of the Mechanism

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Abstract Glycerolysis of Chinese vegetable tallow (CVT) fraction was investigated using a 1,3-specific lipase from *Rhizopus arrhizus* as catalyst. Based upon a binary gradient HPLC with an evaporative light-scattering detector (ELSD), the contents of free fatty acids (FFA), monoglycerides (MG), diglycerides (DG) and triglycerides (TG) with their positional isomers during the glycerolysis were determined. The effects of water content and the ratio of glycerol to oil on the product distribution of glycerolysis were studied. Under the optimum reactant conditions: 250 units lipase per gram oil at 37°C with 1:2 molar ratio of oil to glycerol in a solvent-free system, after 24 h reaction, the product consisted of 7.2% TG, 25.6% MG, 56.1% DG and 4.9% FFA (all by mass). Furthermore, the mechanism of glycerolysis was discussed in detail.

Key words [glycerolysis](#), [Rhizopus arrhizus](#), [lipase](#), [Chinese vegetable tallow](#).

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