

SINTESIS MONOASILGLISEROL DARI MINYAK ZAITUN SECARA ENZIMATIS MENGGUNAKAN LIPASE AMOBIL PADA MATRIKS MODIFIKASI HIDROFILIK-HIDROFOBİK DALAM *STIRRED-TANK REACTOR*

INTISARI

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Monoasilgliserol (MG) merupakan molekul nonionik dan amfifilik yang bersifat surfaktan yang sering digunakan sebagai bahan baku emulsifier dalam industri pangan. Penelitian ini bertujuan untuk mendapatkan kondisi terbaik sintesis MG. Faktor antara lain waktu reaksi, suhu, jumlah katalis, dan rasio mol. MG disintesis dengan mereaksikan minyak zaitun dan gliserol menggunakan katalis lipase *Candida rugosa* yang diamobilisasi pada matriks modifikasi hidrofilik-hidrofobik dalam STR. *Molecular sieve* sebanyak 12% *wt* ditambahkan kedalam reaktor untuk mengurangi kadar air dalam sistem. Hasil menunjukkan bahwa kondisi terbaik untuk sintesis MG dalam STR diperoleh pada rasio mol *olive oil*:gliserol 1:1, lipase amobil 15% *wt*, suhu 50 °C selama 24 jam reaksi. Dengan kondisi tersebut diperoleh MG sebanyak $18,79 \pm 0,2\%$. MG memiliki kapasitas emulsi dan dtabilitas emulsi berturut-turut sebesar $76,52 \pm 4,68\%$ dan $94,99 \pm 0,66\%$.

Kata Kunci: monoasilgliserol, lipase amobil, matriks hidrofilik-hidrofobik, *stirred-tank reactor*

**ENZYMATIC SYNTHESIS OF MONOGLYCERIDE FROM OLIVE OIL
USING IMMOBILIZED LIPASE ON MODIFIED HYDROPHYLIC-
HYDROPHOBIC MATRIX IN STIRRED-TANK REACTOR**

ABSTRACT

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Monoglycerides (MG) are nonionic and amphiphilic molecules that have surfactant properties, which have been widely used as emulsifier in the food industry. The objective of the research was to obtain the best condition for synthesis of MG. Factors, such as reaction time, temperature, amount of enzyme, and mole ratio of olive oil:glycerol were evaluated. MG was synthesized from olive oil and glycerol as substrate in solvent-free system in stirred-tank reactor using immobilized *Candida rugosa* lipase that was immobilized on modified hydrophylic-hydrophobic matrix. Molecular sieve 12% wt was used to reduce water content during reaction. The best condition for MG synthesis in stirred-tank reactor was obtained at mole ratio olive oil:glycerol 1:1, 15 % (wt) of immobilized lipase, 50 °C, and for 24 h of reaction. Under this condition MG was obtained about $18.79 \pm 0.2\%$. The emulsion capacity and stability were $76.52 \pm 4.68\%$ and $94.99 \pm 0.66\%$ respectively.

Keywords: monoglyceride, immobilized lipase, hydrophylic-hydrophobic matrix, *stirred-tank reactor*