

## INTISARI

Sintesis mono dan diasilgliserol dapat dilakukan dengan metode gliserolisis menggunakan lemak nabati yang berasal dari minyak *Calophyllum inophyllum* dan Stearin sawit. Proses gliserolisis dilakukan secara sistem kontinyu dengan menggunakan suatu alat yaitu *High Shear Continuous Stirred Tank Reactor* (HS-CSTR). Hal yang mempengaruhi HS-CSTR adalah laju alir yang berhubungan dengan waktu tinggal material di dalam reaktor. Penelitian ini bertujuan untuk mendapatkan laju alir material terbaik berdasarkan kandungan MDAG yang tinggi dan konsistensi hasil produk MDAG berdasarkan waktu proses 60 menit. Laju alir bahan yang digunakan bervariasi dari 6 mL/menit, 10 mL/menit, 14 mL/menit, 18 mL/menit, dan 22 mL/menit. Reaksi gliserolisis dilakukan pada suhu 120°C, perbandingan mol gliserol : minyak 1:5 (mol/mol), perbandingan minyak 80:20 *Palm Stearin* (PS): Minyak *calophyllum inophyllum* (CO), NaOH 3%, kecepatan pengadukan dalam reaktor 2000 rpm. Produk MDAG dianalisis kandungan TAG, DAG, MAG, dan FFA, titik leleh dan titik leleh slip, kekerasan dan kapasitas emulsi, serta stabilitas. Hasil penelitian menunjukkan bahwa laju alir berpengaruh signifikan terhadap MDAG dan sifat fisik produk. Hasil MDAG tertinggi diperoleh pada laju alir bahan 6 mL/menit dengan kadar MDAG sebesar  $58,56\% \pm 0,91$ , *slip melting* dan *melting point*  $41,44^{\circ}\text{C} \pm 0,08$  dan  $42,9^{\circ}\text{C} \pm 0,03$ , *hardness* diperoleh  $10,88 \text{ N} \pm 0,22$ , stabilitas dan kapasitas emulsi masing-masing  $85,2\% \pm 6,93$  dan  $88,7\% \pm 5,00$ . Waktu proses selama 60 menit dengan pengambilan sampel setiap 10 menit tidak berpengaruh nyata terhadap hasil MDAG, dan sifat fisik produk MDAG, hal ini menunjukkan bahwa produk MDAG konstan.

Kata kunci: Monoasilgliserol, diasilgliserol, *Calophyllum inophyllum*, *palm stearin*, *high shear continuous stirred tank reactor*, gliserolisis.

## ABSTRACT

Mono and diacylglycerol synthesis could be carried out by glycerolysis method using vegetable fat derived from *Calophyllum inophyllum* oil and palm Stearin. The glycerolysis process is carried out in a continuous system using a device, namely the High Shear Continuous Stirred Tank Reactor (HS-CSTR). The thing that influences the HS-CSTR is the flow rate associated with the residence time of the material in the reactor. This study aims to obtain the best material flow rate based on high MDAG content and consistency of MDAG product yield based on a 60 minute processing time. The flow rates of the materials used varied from 6 mL/minute, 10 mL/minute, 14 mL/minute, 18 mL/minute, and 22 mL/minute. The glycerolysis reaction was carried out at a temperature of 120°C, glycerol mole ratio: oil 1:5 (mol/mol), oil ratio 80:20 Palm Stearin (PS):*Calophyllum inophyllum* oil (CO), 3% NaOH, stirring speed in the reactor 2000 rpm. MDAG products were analyzed for TAG, DAG, MAG, and FFA content, slip melting point and melting point, hardness and emulsion capacity, and stability. The study showed that the flow rate has a significant effect on MDAG and the physical properties of the product. The highest MDAG results were obtained at a materials flow rate of 6 mL/min with an MDAG content of  $58.56\% \pm 0.91$ , slip melting and melting yields of  $41.44^{\circ}\text{C} \pm 0.08$  and  $42.9^{\circ}\text{C} \pm 0.03$ , hardness obtained of  $10.88 \text{ N} \pm 0.22$ , stability and emulsion capacity of  $85.2\% \pm 6.93$  and  $88.7\% \pm 5.00$ , respectively. The processing time for 60 minutes with sampling every 10 minutes did not significantly affect the MDAG results, and the physical properties of the MDAG products, this indicates that the MDAG products are constant.

Keyword: Monoacylglycerol, diacylglycerol, *Calophyllum inophyllum*, palm stearin, high shear continuous stirred tank reactor, glycerolysis.