

PENGARUH KARAGENAN DAN GOM ARAB TERHADAP STABILITAS EMULSI SUSU KENTAL MANIS BETA KAROTEN REKOMBINASI DENGAN *EMULSIFIER MONO-DIASILGLISEROL PALM OLEIN*

INTISARI

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Beta karoten merupakan zat gizi penting namun bersifat lipofilik yang bersumber dari minyak sawit merah (*red palm oil*). Susu kental manis dapat dimanfaatkan sebagai makanan/minuman pembawa beta karoten. Menambahkannya ke dalam susu diperlukan *emulsifier* yakni mono-diasilgliserol (MDAG). Kandungan beta karoten tidak stabil karena ketidakstabilan emulsi. Agar emulsi stabil, diperlukan *stabilizer* yakni karagenan dan gom arab. Tujuan penelitian ini adalah menentukan konsentrasi terbaik karagenan dan gom arab dalam susu kental manis rekombinasi terhadap stabilitas emulsi *red palm oil* dengan susu. Susu kental manis rekombinasi mengandung karagenan atau gom arab dengan level 0,02; 0,04; 0,06; 0,08; dan 0,10 (%) dibuat dan dilakukan analisis viskositas, kestabilan viskositas, kadar beta karoten, kestabilan beta karoten, indeks aktivitas emulsi (IAE), indeks stabilitas emulsi (ISE), dan ukuran globula. Pada sampel karagenan, konsentrasi 0,10% memiliki viskositas (8.615 centipoise), kadar beta karoten (570,358 ppm), kestabilan beta karoten, IAE ($82,908 \times 10^{-5} \text{ m}^2/\text{gram}$), dan ukuran globula ($1,0899 \mu\text{m}$) terbaik. Sedangkan konsentrasi 0,02% memiliki kestabilan viskositas dan ISE (1.080 jam) terbaik. Pada sampel gom arab, konsentrasi 0,10% memiliki viskositas (8.581 centipoise), kadar beta karoten (469,653 ppm), kestabilan beta karoten, dan IAE ($84,102 \times 10^{-5} \text{ m}^2/\text{gram}$) terbaik. Konsentrasi 0,06% memiliki ISE (1.705 jam) dan ukuran droplet ($1,1285 \mu\text{m}$) terbaik. Konsentrasi 0,02% memiliki kestabilan viskositas terbaik.

Kata kunci: Susu Kental Manis Rekombinasi, Karagenan, Gom Arab, Beta Karoten, Mono-Diasilgliserol, Stabilitas Emulsi

EFFECT OF CARRAGEENAN AND GUM ARABIC ON EMULSION STABILITY RECOMBINED BETA CAROTENE SWEETENED CONDENSED MILK WITH PALM OLEIN MONO-DIACYLGLYCEROL EMULSIFIER

ABSTRACT

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Beta carotene is an essential nutrient but act lipophilic which is sourced from red palm oil. Sweetened condensed milk can be used as food/drink carrier of beta carotene. Adding it to milk requires emulsifier, one of them is mono-diacylglycerol (MDAG). Beta carotene content is unstable due to instability of emulsion. In order to make emulsion stable, stabilizer is needed, among them are carrageenan and gum arabic. The purpose of this study is to determine the best concentration of carrageenan and gum arabic in recombined sweetened condensed milk on emulsion stability of red palm oil and milk. Recombined sweetened condensed milk contains carrageenan or arabic gum with level 0,02; 0,04; 0,06; 0,08; and 0,10 (%) are made and analyzed for viscosity, viscosity stability, beta carotene content, beta carotene stability, emulsion activity index (EAI), emulsion stability index (ESI), and globule size. In carrageenan sample, concentration 0.10% has the best viscosity (8,615 centipoise), beta carotene content (570,358 ppm), beta carotene stability, EAI ($82.908 \times 10^{-5} \text{ m}^2/\text{gram}$), and globule size (1.0899 μm). While concentration 0.02% has the best viscosity stability and ESI (1,080 hours). In gum arabic sample, concentration 0.10% has the best viscosity (8,581 centipoise), beta carotene content (469,653 ppm), beta carotene stability, and EAI ($84,102 \times 10^{-5} \text{ m}^2/\text{gram}$). Concentration 0.06% has the best ESI (1,705 hours) and droplet size (1.1285 μm). Concentration 0.02% has the best viscosity stability.

Keywords: Recombined Sweetened Milk, Carrageenan, Gum Arabic, Beta Carotene, Mono-Diacylglycerol, Emulsion Stability