

**PENGARUH KONSENTRASI *GELATOR BEES WAX* DAN
MONOACYLGLYCEROL SERTA *BUTTER REPLACEMENT* DENGAN
OLEOGEL MINYAK SAWIT MERAH TERHADAP KARAKTERISTIK
FISIK DAN KIMIA SELAI COKELAT**

INTISARI

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Minyak sawit merah (MSM) mengandung karoten dan tidak mengandung kolesterol berpotensi menggantikan sebagian atau keseluruhan fungsi *butter* pada selai cokelat sebagai pembentuk tekstur melalui *oleogelasi*. *Oleogel* minyak sawit merah terbentuk dengan *gelator Bees Wax* (BW) dan *Monoacylglycerol* (MAG) pada konsentrasi tertentu. Penelitian ini bertujuan mengetahui pengaruh perbedaan konsentrasi *gelator* terhadap *oleogel* minyak sawit merah dan pengaruh *butter replacement* dengan *oleogel* minyak sawit merah terhadap karakteristik fisik dan kimia selai cokelat, sehingga dapat diketahui konsentrasi *gelator* terbaik serta persentase *butter replacement* yang tepat untuk menghasilkan selai cokelat yang mendekati standar.

Dalam penelitian ini, *oleogel* minyak sawit merah dibuat dengan mencampurkan minyak sawit merah dan *gelator* BW (2%, 2,5%, 3%) atau MAG (5%, 10%, 20%) menggunakan *magnetic stirrer* (200 rpm, 90 °C, 15 menit). Kemudian, *oleogel* dicampurkan dengan bahan lain menggunakan *melanger* (1.440 rpm, 60 °C, 75 menit) untuk menghasilkan selai cokelat. Setelah itu, dilakukan serangkaian pengujian terhadap *oleogel* dan selai cokelat.

Hasil penelitian menunjukkan semakin tinggi konsentrasi *gelator*, *hardness oleogel* semakin tinggi dan *oil loss oleogel* semakin rendah. Semakin tinggi persentase *butter replacement* (100% dibandingkan 50%) akan meningkatkan *hardness*, *adhesiveness*, *oil loss*, a^* , dan menurunkan *cohesiveness*. *Butter replacement* tidak mempengaruhi kadar lemak secara signifikan. Selai cokelat 50% *oleogel* MSM dengan *gelator* BW 3% merupakan selai cokelat terbaik dengan karakteristik mendekati selai cokelat 100% *butter*, yaitu *hardness* $1,87 \pm 0,00$ N, *cohesiveness* $0,29 \pm 0,02$, *adhesiveness* $9,90 \pm 0,11$ Nmm, *oil loss* $0,24 \pm 0,07\%$, a^* $0,38 \pm 0,05$, dan kadar lemak $28,98 \pm 0,01\%$. Selai cokelat dengan *oleogel* minyak sawit merah mempunyai kadar karoten $213,84 \pm 0,55 - 215,22 \pm 0,55$ ppm, T_p $42,45 - 46,30$ °C, T_o $34,97 - 44,0$ °C, dan ΔH_M $(-4,03) \text{ J/g} - (-2,02) \text{ J/g}$.

Kata kunci: *oleogel* minyak sawit merah, BW, MAG, selai cokelat standar, *butter replacement*, karoten.

EFFECT OF BEES WAX AND MONOACYLGLYCEROL GELATOR CONCENTRATION WITH BUTTER REPLACEMENT USING RED PALM OIL OLEOGEL ON PHYSICAL AND CHEMICAL CHARACTERISTICS OF CHOCOLATE SPREAD

ABSTRACT

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Red palm oil (RPO) which contains carotene and no cholesterol, has the potential to replace butter partially or completely in chocolate spread through oleogelation. Red palm oil oleogel was formed with Bees Wax (BW) and Monoacylglycerol (MAG) gelator at certain concentrations. This research was intended to determine the effect of different gelator concentrations on red palm oil oleogel and butter replacement with oleogel on chocolate spread, best concentration of gelator, and the exact percentage of butter replacement.

In this research, red palm oil oleogel was made by mixing red palm oil and gelator BW (2%, 2.5%, 3%) or MAG (5%, 10%, 20%) using a *magnetic stirrer* (200 rpm, 90°C, 15 minutes). Then, the oleogel was mixed with other ingredients using a *melanger* (1,440 rpm, 60°C, 75 minutes) to produce chocolate spread. Several tests were carried out on oleogel and chocolate spread.

The higher gelator concentration, the higher the hardness of oleogel and the lower the oil loss was. Higher percentage of butter replacement (100% compared to 50%) increased hardness, adhesiveness, oil loss, a^* , and decrease cohesiveness of the chocolate spreads. Butter replacement did not affect fat content significantly. Chocolate spread containing 50% oleogel BW 3% was considered to have the best characteristics, close to the standard chocolate spread. It had hardness of 1.87 ± 0.00 N, cohesiveness 0.29 ± 0.02 , adhesiveness 9.90 ± 0.11 Nmm, oil loss $0.24 \pm 0.07\%$, a^* 0.38 ± 0.05 , and fat content $28.98 \pm 0.01\%$. Chocolate spread with red palm oil oleogel has carotene content 213.84 ± 0.55 to 215.22 ± 0.55 ppm, T_p 42.45 - 46.30°C , T_o 34.97 - 44.0°C , and ΔH_M (-4.03) - (-2.02) J/g.

Keywords: Red palm oil oleogel, BW, MAG, standard chocolate spread, butter replacement, carotene.