

ABSTRACT

Red palm oil can be used as a partial substitute for cocoa butter in red chocolate spread formulations. However, red palm oil contains high unsaturated fatty acids, so a strategy is needed, namely the oleogelation technique. Monoglyceride oleogelator and beeswax have their advantages and disadvantages. Based on this, a combination of monoglyceride oleogelator and beeswax is required and is expected to complement each other. This research studied the combination of oleogelator beeswax (BW) and monoglyceride (MG) in red palm oil (RPO) oleogel as a partial substitute for cocoa butter (CB) in red chocolate spread (RCS). This study evaluated RPO oleogel with a combination of BW and MG and RPO oleogel as a partial substitute for CB in RCS products. Experiments were performed with the ratio of oleogelator beeswax (BW): monoglyceride (MG) (30:70, 40:60, 50:50, 60:40, 70:30) and the replacement ratio of cocoa butter: oleogel RPO (30%:70%, 40%:60%, 50%:50%, 60%:40%, 70%:30%). The resulting product was analyzed for hardness, cohesiveness, adhesiveness, slip melting point (SMP), melting point (MP), beta carotene, oil loss (OL), polarized light microscopy (PLM), and scanning electron microscopy (SEM). The results showed that the best oleogelator ratio was BW: MG (60:40). The oleogel had a crystal morphology with a combination of *spherulitic crystals* and *small needles*, had good oil binding capacity indicated by a low oil loss value, and had a low melting point. RPO oleogel was applied to the manufacture of red chocolate spread products and the best RPO oleogel substituted for cocoa butter was 70%. The red chocolate spread had a texture that was not hard and easy to spread. The red chocolate spread color tends to be yellow in color, had a microcrystalline structure that was spread over the surface, and had a few small pores so that the oil loss value was low and had a high beta carotene content.

Keywords: Oleogel, red palm oil, beeswax, monoglyceride, red chocolate spread

INTISARI

Red palm oil dapat digunakan sebagai pengganti sebagian *cocoa butter* dalam formulasi *red chocolate spread*. Namun, minyak sawit merah mengandung asam lemak tak jenuh yang cukup tinggi sehingga dibutuhkan strategi yaitu dengan teknik oleogelasi. Oleogelator monogliserida dan *beeswax* memiliki kekurangan dan kelebihan masing-masing. Berdasarkan hal tersebut diperlukan kombinasi antara oleogelator monogliserida dan *beeswax* dan diharapkan dapat saling melengkapi. Pada penelitian ini mempelajari kombinasi oleogelator *beeswax* (BW) dan monogliserida (MG) pada oleogel *red palm oil* (RPO) sebagai pengganti parsial *cocoa butter* (CB) pada *red chocolate spread* (RCS). Tujuan dari penelitian ini ialah mengevaluasi oleogel RPO dengan kombinasi BW dan MG dan mengaplikasikan oleogel RPO sebagai pengganti parsial CB pada produk RCS. Eksperimen dilakukan dengan rasio oleogelator (BW:MG) (30:70, 40:60, 50:50, 60:40, 70:30) dan rasio penggantian (CB:oleogel RPO) (30%:70%, 40%:60%, 50%:50%, 60%:40%, 70%:30%). Produk yang dihasilkan dianalisis *hardness*, *cohesiveness*, *adhesiveness*, *slip melting point* (SMP), *melting point* (MP), beta karoten, *oil loss* (OL), *polarized light microscopy* (PLM), dan *scanning electron microscopy* (SEM). Hasil penelitian menunjukkan bahwa rasio oleogelator terbaik adalah BW:MG (60:40). Oleogel tersebut memiliki morfologi kristal dengan kombinasi kristal *spherulitic* dan jarum kecil, memiliki kapasitas pengikatan minyak yang baik ditunjukkan dengan nilai *oil loss* yang rendah dan memiliki titik leleh rendah. Oleogel RPO diaplikasikan pada pembuatan produk *red chocolate spread* dan didapatkan penggantian *cocoa butter* dengan oleogel RPO terbaik sebesar 70%. *Red chocolate spread* memiliki tekstur yang tidak keras dan mudah untuk dioles. Warna *red chocolate spread* cenderung berwarna kuning, memiliki struktur mikro kristal yang tersebar di permukaan dan terdapat sedikit pori berukuran kecil sehingga nilai *oil loss* rendah dan memiliki kandungan beta karoten yang tinggi.

Kata Kunci: Oleogel, *red palm oil*, *beeswax*, monogliserida, *red chocolate spread*