INTERESTERIFIKASI KIMIAWI MINYAK BIJI KARET (*Hevea brasiliensis*), MINYAK IKAN NILA (*Oreochromis niloticus*), DAN *PALM STEARIN* (*Elaeis guineensis*) UNTUK MENGHASILKAN *SHORTENING*

INTISARI

Interesterifikasi kimiawi merupakan proses redistribusi asilgliserol untuk memperoleh lemak dengan karakteristik tertentu. Penelitian ini bertujuan menentukan rasio *palm stearin*, minyak biji karet, dan minyak ikan untuk menghasilkan *shortening* pada kisaran suhu titik leleh 40-49°C atau mirip dengan *shortening* komersial dan mengetahui perbedaan pengaruh interesterifikasi kimiawi dan *blending* terhadap sifat fisikokimiawi (tekstur dan titik leleh) *shortening* yang dihasilkan. Penelitian dilakukan tiga tahap yaitu preparasi dan karakterisasi bahan, tahap dua interesterifikasi kimiawi dan *blending*, dan tahap ketiga analisa sifat fisik dan kimia *shortening*. *Blending* dan interesterifikasi kimiawi dilakukan pada palm stearin , minyak biji karet, dan minyak ikan dengan 5 rasio (b/b) rasio ke-1 (50/30/20), rasio ke-2 (60/35/5), rasio ke-3 (70/15/15), rasio ke-4 (80/10/10), rasio ke-5 (90/5/5).

Hasil penelitian menunjukkan bahwa s*hortening* hasil interesterifikasi kimiawi dan pencampuran fisik (*blending*) memiliki karakteristik fisik dan kimiawi yang tidak memiliki perbedaan signifikan (P>0,05), kecuali pada tekstur, *slip melting point, iodine value* dan *melting point*. S*hortening* yang dihasilkan, baik pada *blending* atau interesterifikasi kimiawi sebagian besar telah mendekati karakteristik *shortening* komersial dengan nilai *slip melting point* (33,50-50,35°C), *melting point* (39,80-51,50°C), *solid fat index* (8,63-34,34%), tekstur (55,25-914,27 gf/cm^2), kecerahan (L*) (75,33-87,76), asam lemak bebas (0,20-0,25%), angka peroksida (0,70-1,48 meq/kg), *iodine value* (52,55-77,60). Komponen asam lemak EPA dan DHA ditemukan dalam jumlah sangat kecil yakni kurang dari 0,01 % pada rasio 50/30/20. Rasio yang paling mendekati *shortening* komersial adalah pada interesterifikasi kimiawi rasio 80/10/10 dan rasio 4 90/5/5 dan pada *blending* rasio 80/10/10. Selain itu secara keseluruhan produk lemak *shortening* komersial yang dihasilkan telah mendekati standar SNI dan BPOM untuk lemak reroti (*shortening*).

Kata Kunci: Minyak biji karet, Minyak ikan, *Palm stearin*, Interesterifikasi kimiawi, S*hortening*

CHEMICAL INTERESTERIFICATION OF RUBBER SEED OIL (*Hevea brasiliensis*), TILAPIA FISH OIL (*Oreochromis niloticus*), AND PALM STEARIN (*Elaeis guineensis*) TO PRODUCE SOLID SHORTENING.

ABSTRACT

Chemical interesterification is the process of acylglycerol redistribution to produce fat with certain characteristics. This study aims at determining the ratio of palm stearin, rubber kernel oil, and tilapia fish oil to produce shortening at melting points of 40-49°C or similar to commercial shortening and to examine difference in the effect of chemical interesterification and blending on the physicochemical (textural and melting point) properties of shortening produced. It was conducted in two steps, i.e. preparation and characterization, then chemical interesterification and blending. Chemical interesterification and blending were carried out in palm stearin, rubber kernel oil, and tilapia fish oil with five ratios (b/b), i.e.: first ratio (50/30/20), second ratio (60/35/5), third ratio (70/15/15), fourth ratio (80/10/10), fifth ratio (90/5/5). These results were then compared with the physicochemical characteristics of commercial shortening.

The results of the study show that there was no significant difference in the chemical characteristics of shortening resulted from chemical interesterification and blending ($P>0.05$) such as free fatty acid, water content, and peroxide value, except in texture, slip melting point, iodine value, and melting point. The shortenings produced in chemical interesterification and blending were close to the characteristics of commercial shortenings in slip melting point values (33.50-50.35°C), melting points (39,80-51,50°C), solid fat index (8.63-34.34%), texture (55.25-914.27 gf/cm^2), lightness (L*) (75.33-87.76), free fatty acid (0.20-0.25%), peroxide value (0.70-1.48 meq/kg), and iodine value (52.55-77.60). The fatty acid components of EPA and DHA were found in a very small number, i.e. less than 0.01 % at ratio of 50/30/20. The ratios closest to the commercial shortenings were the ratios of 80/10/10 and of 90/5/5 in chemical interesterification and a ratio of 80/10/10 in blending. Moreover, commercial shortening products were entirely close to the Indonesian National Standard (*Standar Nasional Indonesia*—SNI) and the Drug and Food Monitoring Board (*Badan Pengawas Obat dan Makanan* —BPOM) for shortenings.

Keywords: Rubber seed oil, Fish oil, Palm stearin, Chemical interesterification, Shortening