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**KARAKTERISTIK FISIK DAN AKTIVITAS ANTIOKSIDAN
NANOLIPOSOM MINYAK BIJI ANGGUR
(*Vitis vinifera Seed Oil*)**

ABSTRAK

Latar Belakang: Minyak biji anggur mengandung senyawa fenolik diantaranya yaitu flavonoid, karotenoid, asam fenolik, tanin, dan asam galat yang memiliki sifat antioksidan dan *anti aging*. Tujuan penelitian ini adalah memformulasikan minyak biji anggur menjadi nanoliposom dan mengevaluasi karakteristik fisik serta aktivitas antioksidan.

Metode: Jenis penelitian yang digunakan yaitu eksperimental. Variasi bobot minyak biji anggur yang digunakan yaitu 1 gram (F1), 2 gram (F2) dan 4 gram (F3). Evaluasi yang dilakukan meliputi organoleptik, pH, ukuran partikel, indeks polidispersitas dan aktivitas antioksidan IC₅₀ metode DPPH (*1,1-diphenyl-2-picrylhydrazil*).

Hasil: Karakteristik fisik organoleptik nanoliposom (F1) cair berwarna putih, (F2) cair berwarna kekuningan, dan (F3) agak kental dengan warna putih kecoklatan. Nanoliposom memenuhi syarat uji pH (F1) $7,67 \pm 0,10$; (F2) $7,58 \pm 0,17$; dan (F3) $7,58 \pm 0,02$. Ukuran partikel (F1) $10,91 \pm 0,52$ nm; (F2) $9,92 \pm 2,15$ nm dan (F3) $11,03 \pm 0,42$ nm. Indeks polidispersitas (F1) $0,380 \pm 0,01$; (F2) $0,398 \pm 0,18$ dan (F3) $0,591 \pm 0,02$. Nilai rata-rata IC₅₀ yang dihasilkan (F1) $130,27 \pm 19,84$ ppm; (F2) $63,01 \pm 0,19$ ppm, dan (F3) $18,90 \pm 0,27$ ppm.

Kesimpulan: Variasi bobot minyak biji anggur dalam formula nanoliposom memberikan pengaruh yang signifikan terhadap organoleptik (warna), indeks polidispersitas, dan pH sediaan nanoliposom, tetapi tidak berbeda signifikan pada ukuran partikel. Variasi bobot minyak biji anggur memberikan pengaruh yang signifikan terhadap aktivitas antioksidan nanoliposom.

Kata kunci: minyak biji anggur, nanoliposom, antioksidan

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PHYSICAL CHARACTERISTICS AND ANTIOXIDANT ACTIVITY OF NANOLIPOSOMES GRAPE SEED OIL (*Vitis vinifera* Seed Oil)

ABSTRACT

Background: Grape seed oil contains phenolic compounds including flavonoids, carotenoids, phenolic acids, tannins, and gallic acid which have antioxidant and anti-aging properties. This research aims to formulate grape seed oil into nanoliposomes and evaluate the physical characteristics and antioxidant activity.

Method: The type of research used is experimental. Variations in the weight of grape seed oil used are 1 gram (F1), 2 grams (F2) and 4 grams (F3). The evaluation carried out included organoleptic, pH, particle size, polydispersity index and IC50 antioxidant activity using the DPPH (1,1-diphenyl-2-picrylhydrazil) method.

Results: The organoleptic physical characteristics of nanoliposomes (F1) are white liquid, (F2) yellowish liquid, and (F3) slightly thick with a brownish-white color. Nanoliposomes meet the pH test requirements (F1) 7.67 ± 0.10 ; (F2) 7.58 ± 0.17 ; and (F3) 7.58 ± 0.02 . Particle size (F1) 10.91 ± 0.52 nm; (F2) 9.92 ± 2.15 nm and (F3) 11.03 ± 0.42 nm. Polydispersion index (F1) 0.380 ± 0.01 ; (F2) 0.398 ± 0.18 and (F3) 0.591 ± 0.02 . The resulting average IC50 value (F1) was 130.27 ± 19.84 ppm; (F2) 63.01 ± 0.19 ppm, and (F3) 18.90 ± 0.27 ppm.

Conclusion: variations in the weight of grape seed oil in the nanoliposome formulation had a significant influence on the organoleptic (color), polydispersity index, and pH of the nanoliposome preparation, but did not differ significantly in particle size. Variations in the weight of grape seed oil had a significant effect on the antioxidant activity of nanoliposomes.

Keywords: grape seed oil, nanoliposomes, antioxidant