

Univesitas Ngudi Waluyo
Program Studi S1 Farmasi
Fakultas Kesehatan
Skripsi, Maret 2025
Baiq Elok Arselia
051211008

PENGARUH KONSENTRASI NANOSERUM MINYAK ALMOND (*Oleum amygdalae*) TERHADAP KELEMBAPAN KULIT

ABSTRAK

Latar belakang: Minyak almond (*Oleum amygdalae*) diketahui kaya akan asam lemak, termasuk gliserida, oleat, linoleat, palmitat, dan miristat, triasilgliserol, tokoferol vitamin B, E, dan K yang berpotensi meningkatkan fungsi penghalang epidermis dan menjaga kelembapan kulit. Nanoserum minyak almond diformulasikan dalam sistem nanoemulsi untuk meningkatkan bioavailabilitas dan penetrasi bahan aktif ke lapisan kulit yang lebih dalam. Penelitian ini bertujuan untuk mengevaluasi sifat fisik dan pengaruh konsentrasi nanoserum minyak almond terhadap kelembapan kulit.

Metode: Penelitian ini merupakan penelitian eksperimental menggunakan minyak almond dalam pembuatan nanoserum yang dievaluasi mutu fisik nanoemulsi, sifat fisik nanoserum dan pengaruh konsentrasi nanoserum terhadap kelembapan kulit. Nanoserum diformulasikan dalam 3 seri konsentrasi 1%, 3%, 5%. Kelembapan kulit diukur menggunakan *skin analyzer* dengan parameter nilai kelembapan >43%. Analisis data mutu fisik dan kelembapan kulit nanoserum minyak almond menggunakan *One Way Anova*.

Hasil: Nanoemulsi minyak almond memiliki ukuran partikel 11,66 nm, indeks polidispersitas (PDI) 0,295, dan persen transmitansi 99,469%, menunjukkan stabilitas dan homogenitas yang baik. Sifat fisik nanoserum menunjukkan formula nanoserum memiliki rentang pH 6,60–6,87, viskositas 2483–3527 cPs, dan daya sebar 6,15–7,06 cm, kecuali pada uji daya lekat karena <1 detik. Nanoserum konsentrasi 1% memiliki kelembapan 41-48%, kelembapan kulit konsentrasi 3% 44-49%, kelembapan kulit konsentrasi 5% antara 45-60%. Kelembapan nanoserum dipengaruhi oleh kandungan gel *aloevera*.

Kesimpulan: Nanoserum minyak almond memiliki sifat fisik yang telah memenuhi syarat meliputi organoleptis, homogenitas, pH, daya sebar, viskositas, sineresis dan sentrifugasi kecuali daya lekat. Peningkatan konsentrasi nanoemulsi pada nanoserum minyak almond memiliki pengaruh signifikan terhadap kelembapan kulit.

Kata kunci: nanoserum, minyak almond, kelembapan, kulit

Ngudi Waluyo University
S1 Pharmacy Study Program
Faculty of Health
Final Project, March 2025
Baiq Elok Arselia
051211008

EFFECT OF ALMOND OIL (*Oleum amygdalae*) NANOSERUM CONCENTRATION ON SKIN FLEXIBILITY

ABSTRACT

Background: Almond oil (*Oleum amygdalae*) is known to be rich in fatty acids, including glycerides, oleic, linoleic, palmitic, and myristic, triacylglycerols, tocopherols of vitamins B, E, and K that have the potential to improve epidermal barrier function and maintain skin moisture. Almond oil nanoserum was formulated in a nanoemulsion system to increase the bioavailability and penetration of active ingredients into deeper skin layers. This study aims to evaluate the physical properties and effect of almond oil nanoserum concentration on skin moisture.

Methods: This study was an experimental study using almond oil in the preparation of nanoserum which evaluated the physical quality of nanoemulsion, physical properties of nanoserum and the effect of nanoserum concentration on skin moisture. Nanoserum was formulated in 3 concentration series of 1%, 3%, 5%. Skin moisture was measured using a skin analyzer with the parameter of moisture value >43%. Data analysis of physical quality and skin moisture of almond oil nanoserum using One Way Anova.

Results: The almond oil nanoemulsion had a particle size of 11.66 nm, a polydispersity index (PdI) of 0.295, and a percent transmittance of 99.469%, showing good stability and homogeneity. The physical properties of nanoserum showed that the nanoserum formula had a pH range of 6.60-6.87, a viscosity of 2483-3527 cPs, and a spreadability of 6.15-7.06 cm, except in the adhesion test because it was <1 second. The 1% concentration nanoserum has 41-48% moisture, 3% concentration skin moisture 44-49%, 5% concentration skin moisture between 45-60%. The moisture of nanoserum is influenced by the content of *aloevera* gel.

Conclusion: Almond oil nanoserum has qualified physical properties including organoleptic, homogeneity, pH, spreadability, viscosity, syneresis and centrifugation except adhesion. Increasing nanoemulsion concentration in almond oil nanoserum has a significant effect on skin moisture.

Keywords: nanoserum, almond oil, moisture, skin