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FORMULASI DAN PENETAPAN KADAR FLAVONOID TOTAL SERTA UJI AKTIVITAS ANTIOKSIDAN EKSTRAK DAN EMULGEL EKSTRAK BIJI PINANG (*Areca catechu* L.)

ABSTRAK

Latar belakang: Biji pinang (*Areca catechu* L.) mengandung senyawa flavonoid yang memiliki aktivitas antioksidan tinggi serta bisa melembabkan kulit sehingga dapat diformulasikan dalam bentuk antioksidan topikal seperti emulgel. Tujuan penelitian ini adalah menganalisis metabolit sekunder dalam ekstrak biji pinang, menganalisis kadar flavonoid total serta potensi aktivitas antioksidan ekstrak dan emulgel ekstrak biji pinang.

Metode: Penelitian ini menggunakan metode eksperimen dengan ekstraksi maserasi. Ekstrak dilakukan skrining fitokimia kemudian diformulasikan menjadi 4 formula emulgel yaitu F0, F1 konsentrasi 1%, F2 konsentrasi 2% dan F3 konsentrasi 3%. Uji stabilitas fisik meliputi uji organoleptis, pH, viskositas, daya sebar dan daya lekat setiap minggu selama 3 minggu. Penetapan kadar flavonoid total dan pengujian aktivitas antioksidan ekstrak serta sediaan emulgel biji pinang menggunakan spektrofotometri UV-Vis. Data hasil penelitian dianalisis statistik menggunakan SPSS.

Hasil: Kandungan metabolit sekunder pada ekstrak biji pinang adalah flavonoid, alkaloid, triterpenoid, steroid, tanin dan saponin. Sediaan mengalami perubahan pada uji stabilitas fisik 3 minggu tetapi masih memasuki rentang persyaratan uji fisik emulgel. Rata-rata kadar flavonoid total (mgQE/g) dari ekstrak biji pinang, emulgel F1, emulgel F2 dan emulgel F3 berturut-turut sebesar 29,702±0,175, 15,965±0,202, 20,880±0,177, dan 26,262±0,134. Rata-rata nilai IC_{50} (ppm) dari ekstrak biji pinang, emulgel F1, emulgel F2 dan emulgel F3 berturut-turut sebesar 22,592±0,133, 40,233±0,331, 38,261±0,111 dan 33,808±1,080.

Simpulan: Kadar flavonoid total tertinggi diperoleh dari ekstrak biji pinang (29,702±0,175 mgQE/g) dan emulgel F3 (26,262±0,134 mgQE/g). Aktivitas antioksidan ekstrak, emulgel F1, emulgel F2 dan emulgel F3 termasuk kategori sangat kuat.

Kata kunci: Biji pinang, emulgel, flavonoid, antioksidan.

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FORMULATION AND DETERMINATION OF TOTAL FLAVONOIDS AND ASSESSMENT OF ANTIOXIDANT ACTIVITY OF THE EXTRACTS AND EMULGEL EXTRACTS OF ARECA (Areca catechu L.) SEEDS

ABSTRACT

Background: Areca nut (Areca catechu L.) seeds contain flavonoid compounds which have high antioxidant activity and can moisturize the skin so that they can be formulated in the form of topical antioxidants such as emulgels. The purpose of this study was to analyze the secondary metabolites in areca seed extract, to analyze the total flavonoid content and the potential antioxidant activity of areca seed extract and emulgel.

Methods: This study used an experimental method with maceration extraction. The extract was subjected to phytochemical screening and then formulated into 4 emulgel formulas namely F0, F1 at a concentration of 1%, F2 at a concentration of 2% and F3 at a concentration of 3%. Physical stability tests included organoleptic, pH, viscosity, spreadability and adhesion tests every week for 3 weeks. Determination of total flavonoid levels and testing of antioxidant activity of extracts and areca seed emulgel preparations using UV-Vis spectrophotometry. The research data were analyzed statistically using SPSS.

Result: The content of secondary metabolites in areca seed extract are flavonoids, alkaloids, triterpenoids, steroids, tannins and saponins. The preparation underwent changes in the 3-week physical stability test but still entered the range of emulgel physical test requirements. The average total flavonoid content (mgQE/g) of areca seed extract, emulgel F1, emulgel F2 and emulgel F3 were 29.702 ± 0.175, 15.965 ± 0.202, 20.880 ± 0.177, and 26.262 ± 0.134, respectively. The average IC50 values (ppm) of areca seed extract, emulgel F1, emulgel F2 and emulgel F3 were 22.592 ± 0.133, 40.233 ± 0.331, 38.261 ± 0.111 and 33.808 ± 1.080, respectively.

Conclusion: The highest levels of total flavonoids were obtained from areca seed extract (29.702 ± 0.175 mgQE/g) and F3 emulgel (26.262 ± 0.134 mgQE/g). The antioxidant activities of the extracts, emulgel F1, emulgel F2 and emulgel F3 were very strong.

Key words: Areca nut, emulgel, flavonoids, antioxidants.