

RINGKASAN

Sabut kelapa muda & tua merupakan hasil samping dari tanaman kelapa yang belum banyak dimanfaatkan oleh masyarakat. Sabut kelapa mengandung senyawa fitokimia yang turut berperan sebagai antimikroba. Tingkat kepolaran pelarut merupakan faktor penting yang mempengaruhi keberhasilan proses ekstraksi. Polaritas pelarut dalam ekstraksi harus sama atau sangat dekat dengan polaritas bahan aktif yang diekstrak agar ekstraksi berjalan secara efisien. Penelitian ini dilakukan untuk mengetahui: 1) karakteristik fitokimia dalam ekstrak sabut kelapa muda & tua pada variasi pelarut yang berbeda; 2) aktivitas antimikroba dalam ekstrak sabut kelapa muda & tua pada variasi pelarut yang berbeda; 3) interaksi perlakuan antara tingkat ketuaan sabut kelapa dan jenis pelarut yang menghasilkan aktivitas antimikroba tertinggi.

Rancangan percobaan yang digunakan pada penelitian ini adalah Rancangan Acak Lengkap (RAL). Faktor yang diteliti meliputi tingkat ketuaan sabut kelapa dan jenis pelarut. Faktor tingkat ketuaan sabut kelapa (B) terdiri atas sabut kelapa muda (B1) dan sabut kelapa tua (B2). Faktor jenis pelarut (P) terdiri atas akuades (P1), etanol (P2), etil asetat (P3) dan n-heksan (P4). Variabel yang diamati diantaranya pH ekstrak, fitokimia kualitatif (tanin, flavonoid, terpenoid, saponin, steroid, alkaloid), aktivitas antimikroba (mikroba uji *Saccharomyces cerevisiae*, *Acetobacter acetii*, mikroba dari nira rusak), fitokimia kuantitatif (total fenolik, total flavonoid, total tanin) serta spektrum absorbansi ekstrak. Data dianalisis menggunakan analisis ragam (ANOVA), dan apabila berpengaruh nyata dilanjutkan dengan uji DMRT pada taraf 5%.

Hasil pengujian fitokimia kualitatif menunjukkan bahwa ekstrak sabut kelapa muda positif mengandung senyawa tanin, flavonoid dan steroid. Sedangkan sabut kelapa tua positif mengandung senyawa tanin, flavonoid, steroid dan terpenoid. Ekstrak sabut kelapa muda dan tua menunjukkan aktivitas antimikroba terhadap *Saccharomyces cerevisiae*, *Acetobacter acetii* dan mikroba dari nira rusak dengan kategori lemah. Berdasarkan hasil analisis ragam pada parameter aktivitas antimikroba ekstrak sabut kelapa terhadap ketiga mikroba uji, diketahui bahwa perlakuan ekstrak akuades sabut kelapa tua merupakan interaksi perlakuan terbaik dibandingkan perlakuan lainnya. Perlakuan ekstrak akuades sabut kelapa tua memiliki rata-rata total fenolik 76,04 mg GAE/g; total flavonoid 1,57 mg QE/g; dan total tanin 522,95 mg TAE/g. Berdasarkan hasil spektrum absorbansi ekstrak, perlakuan ekstrak akuades sabut kelapa tua memiliki titik puncak pada 701,5 nm, 383,5 nm, 365,5 nm, 353 nm, 341,5 nm, 334,5 nm, 321,5 nm, 312,5 nm, 254 nm dan 223,5 nm. Setelah dibandingkan antara titik puncak perlakuan ekstrak akuades sabut kelapa tua dengan beberapa pustaka, diduga kuat ekstrak akuades sabut kelapa tua mengandung senyawa tanin, flavonoid dan steroid.

Kata kunci: sabut kelapa muda & tua, fitokimia, antimikroba

SUMMARY

Young and old coconut husks are by-products of the coconut plant that have not been widely used by the community. Coconut husk contains phytochemical compounds that also act as antimicrobials. The level of solvent's polarity is an important factor affecting the success of the extraction process. For efficient extraction, the polarity of the solvent in the extraction must be the same or very close to the polarity of the active ingredient being extracted. This research was conducted to determine: 1) the phytochemical characteristics of young and old coconut husk extract in different solvent variations; 2) antimicrobial activity in young and old coconut husk extract in different solvent variations; and 3) the combination of treatment between the level of aging of coconut husks and the types of solvents obtained from the highest antimicrobial activity.

The experimental design used in this study was a Completely Randomized Design (CRD). The factors studied included the level of aging of coconut husk and the type of solvent. The factor of the level of aging of coconut husk (B) consists of young coconut husk (B1) and old coconut husk (B2). The factor type of solvent (P) consisted of aquadest (P1), ethanol (P2), ethyl acetate (P3) and n-hexane (P4). Variables observed included extract pH, qualitative phytochemicals (tannins, flavonoids, terpenoids, saponins, steroids, alkaloids), antimicrobials (test microbes *Saccharomyces cerevisiae*, *Acetobacter aceti*, microbes from damaged sap), quantitative phytochemicals (total phenolics, total flavonoids, total tannins) and the absorbance spectrum of the extract. Data analysis used analysis of variance (ANOVA), and if it had an effect, it would be continued with the DMRT test at the 5% level.

The results of qualitative phytochemical testing showed that young coconut husk extract contained tannins, flavonoids, and steroids. Meanwhile, old coconut husk contained tannins, flavonoids, steroids and terpenoids. Young and old coconut husks extracts showed antimicrobial activity against *Saccharomyces cerevisiae*, *Acetobacter aceti* and microbes from damaged sap with a weak category. Based on the results of the analysis of variance on the antimicrobial parameters of the coconut husk extract against the three tested microbes, it is known that the old coconut husk aquadest extract is the best combination of treatments compared to other treatments. The total phenolic content of old coconut husk aquadest extract was 76.04 mg GAE/g, total flavonoids were 1.57 mg QE/g, and total tannin was 522.95 mg TAE/g. Based on the results of the absorbance spectrum of the extract, the old coconut husk aquadest extract treatment had peak points at 701.5 nm, 383.5 nm, 365.5 nm, 353 nm, 341.5 nm, 334.5 nm, 321.5 nm, 312, 5 nm, 254 nm and 223.5 nm. When the peak treatment points of old coconut husk aquadest extract were compared to several kinds of literature, it was determined that old coconut husk aquadest extract contains tannin, flavonoid, and steroid compounds.

Keywords: yong & old coconut husk, phytochemical, antimicrobial