

ABSTRAK

Analisis fisikokimia simplisia buah andaliman dan uji aktivitas antioksidan ekstrak metanol buah andaliman telah berhasil dilakukan. Analisis fisikokimia yang dilakukan meliputi beberapa parameter uji berdasarkan metode standar, antara lain uji kadar air, kadar abu, cemaran logam, cemaran mikroba, dan analisis metabolit sekunder. Sementara itu, uji aktivitas antioksidan dilakukan dengan metode DPPH. Analisis fisikokimia simplisia buah andaliman dilakukan sebagai tahapan awal untuk mengetahui mutu buah andaliman sebagai bahan baku obat. Hasil penelitian terhadap simplisia buah andaliman menunjukkan perolehan kadar air $14,64 \pm 0,01\%$; kadar abu total $6,52 \pm 0,02\%$; dan kadar abu tak larut asam $0,16 \pm 0,02\%$. Pada uji cemaran logam diperoleh kandungan Pb $<0,040$ mg/kg; Cd $<0,005$ mg/kg; As $0,86$ mg/kg; dan Hg $<0,005$ mg/kg. Pada uji cemaran mikroba diperoleh kandungan Angka Lempeng Total $3,7 \times 10^7$ koloni/g; kapang $4,0 \times 10^3$ koloni/g; khamir <10 koloni/g; *E. coli* <3 APM/g; *P. aeruginosa* 40 koloni/g; serta negatif untuk *Salmonella spp.* dan *S. aureus*. Pada analisis metabolit sekunder dengan uji pereaksi warna menunjukkan bahwa buah andaliman mengandung metabolit sekunder golongan alkaloid, flavonoid, steroid, triterpenoid, dan tanin, yang diperkuat dengan data spektrum FTIR yang memperlihatkan adanya gugus fungsi khas untuk masing-masing kelompok tersebut, antara lain gugus O-H, C-H sp^3 , C=O, C=C aromatis, C-N, dan C-O. Pada analisis Kromatografi Lapis Tipis memperlihatkan adanya tiga senyawa dominan dengan nilai Rf $0,7625$; $0,625$; dan $0,175$ (n-heksan:etil asetat = 5:5). Pada uji aktivitas antioksidan ekstrak metanol buah andaliman diperoleh nilai IC_{50} sebesar $33,0$ ppm yang tergolong ke dalam antioksidan sangat kuat. Berdasarkan parameter uji analisis fisikokimia simplisia buah andaliman, sebagian besar sudah memenuhi standar syarat mutu-aman-manfaat.

Kata kunci: *Zanthoxylum acanthopodium*, analisis fisikokimia, aktivitas antioksidan.

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ABSTRACT

Physicochemical analysis of andaliman fruit simplicia and the antioxidant activity assay of andaliman fruit methanol extract have been successfully carried out. Physicochemical analysis carried out included several test parameters based on standard methods, including test of water content, ash content, metal contamination, microbial contamination, and analysis of secondary metabolites. Meanwhile, the antioxidant activity assay was carried out by DPPH method. Physicochemical analysis of andaliman fruit simplicia was carried out as an initial step to determine the quality of andaliman fruit as a raw material for medicine. The results of research showed andaliman fruit simplicia has water content of $14.64 \pm 0.01\%$; total ash content of $6.52 \pm 0.02\%$; and acid insoluble ash content of $0.16 \pm 0.02\%$. In the metal contamination test obtained Pb content of <0.040 mg/kg; Cd of <0.005 mg/kg; As of 0.86 mg/kg; and Hg $<0,005$ mg/kg. In the microbial contamination test obtained the Total Plate Count of 3.7×10^7 colonies/g; mold of 4.0×10^3 colonies/g; yeast of <10 colonies/g; E. coli of <3 MPN/g; P. aeruginosa of 40 colonies/g; and negative for Salmonella spp. and S. aureus. In the analysis of secondary metabolites with color reagent tests showed that andaliman fruit contain secondary metabolites of alkaloids, flavonoids, steroids, triterpenoids, and tannins, which were reinforced by FTIR spectrum data that showed the existence of typical functional group for each group, such as O-H groups, C-H sp^3 , C=O, C=C aromatic, C-N, and C-O. In the Thin Layer Chromatography analysis showed the presence of three dominant compounds with Rf values of 0.7625 ; 0.625 ; and 0.175 (n-hexane:ethyl acetate = 5:5). In the antioxidant activity assay of andaliman fruit methanol extract obtained IC_{50} value of 33.0 ppm which is classified as a very strong antioxidant. Based on the test parameters of physicochemical analysis of andaliman fruit simplicia, most of them have met the quality-safe-benefit standard.

Keywords: *Zanthoxylum acanthopodium*, physicochemical analysis, antioxidant activity.

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