

OPTIMASI JENIS PELARUT TERHADAP NILAI RENDEMEN DAN KADAR TOTAL ANTOSIANIN PADA EKSTRAK DAUN SIRIH MERAH (*Piper crocatum*) DENGAN EKSTRAKSI ULTRASONIK

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Abstrak

Daun sirih merah berpotensi mengandung senyawa antosianin yang memiliki beragam manfaat klinis. Perolehan senyawa antosianin dapat dipengaruhi oleh penggunaan jenis pelarut dalam proses ekstraksi. Penelitian ini bertujuan untuk menentukan jenis pelarut yang optimal untuk mengekstraksi antosianin dari daun sirih merah. Ekstraksi dilakukan dengan metode ultrasonik menggunakan pelarut metanol, etil asetat, dan n-heksan, yang diasamkan dengan HCl 1%. Nilai rendemen ekstrak kental dihitung, sedangkan kadar antosianin ditentukan dengan metode pH diferensial pada pH 1 dan 4,5 menggunakan spektrofotometri UV-Vis. Data dianalisis secara statistik dengan uji *One-Way* ANOVA dan korelasi Pearson. Hasil menunjukkan bahwa rendemen tertinggi diperoleh dari ekstrak metanol:HCl 1% ($20,10 \pm 0,65\%$), diikuti etil asetat:HCl 1% ($11,87 \pm 0,30\%$), dan n-heksan:HCl 1% ($6,41 \pm 0,37\%$). Selanjutnya, hasil kadar total antosianin tertinggi diperoleh dari ekstrak metanol:HCl 1% ($18,3688 \pm 0,3010$ mg/L), diikuti etil asetat:HCl 1% ($7,5423 \pm 0,2101$ mg/L), dan n-heksan:HCl 1% ($2,1709 \pm 0,0835$ mg/L). Analisis *One-Way* ANOVA menunjukkan bahwa jenis pelarut memberikan perbedaan signifikan terhadap nilai rendemen dan kadar total antosianin ($p < 0,05$). Uji korelasi Pearson mengonfirmasi adanya hubungan positif sangat kuat antara jenis pelarut dengan nilai rendemen ($r = 0,991$) dan kadar total antosianin ($r = 0,956$). Dengan demikian, metanol:HCl 1% terbukti sebagai pelarut yang paling optimal untuk mengekstraksi antosianin dari daun sirih merah.

Kata Kunci: Antosianin, pelarut, rendemen, sirih merah, ultrasonik

SOLVENT TYPE OPTIMIZATION ON YIELD VALUE AND TOTAL ANTHOCYANIN CONTENT OF RED BETEL LEAF (*Piper crocatum*) BY ULTRASONIC EXTRACTION

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Abstract

Red betel leaf potentially had anthocyanins which has many clinical benefits. Anthocyanin obtainment can be influenced by the type of solvent used in extraction. This study's purpose was to determine the optimal solvent type for extracting anthocyanins from red betel leaves. Extraction was carried out by ultrasonic method using methanol, ethyl acetate, and n-hexane solvents, acidified with HCl 1%. The yield of the concentrated extract was calculated, while the anthocyanin content was determined using the pH differential method at pH 1 and 4.5 via UV-Vis spectrophotometry. The data were analysed statistically using One-Way ANOVA and Pearson correlation test. The results showed the highest yield was obtained from the methanol:HCl 1% extract ($20.10 \pm 0.65\%$), followed by ethyl acetate:HCl 1% ($11.87 \pm 0.30\%$) and n-hexane:HCl 1% ($6.41 \pm 0.37\%$). Furthermore, the highest total anthocyanin content was obtained from the methanol:HCl 1% extract (18.3688 ± 0.3010 mg/L), followed by ethyl acetate:HCl 1% (7.5423 ± 0.2101 mg/L) and n-hexane:HCl 1% (2.1709 ± 0.0835 mg/L). One-Way ANOVA analysis shows the type of solvent has significant differences in yield and total anthocyanin content ($p < 0.05$). Pearson correlation test confirmed a very strong positive correlation between the type of solvent on the yield value ($r = 0.991$) and total anthocyanin content ($r = 0.956$). Thus, methanol:HCl 1% proved to be the most optimal solvent for extracting anthocyanins from red betel leaves.

Keywords: Anthocyanin, Red betel, Solvent, Ultrasonic, Yield