

Ekstraksi senyawa bioaktif kurkumin dari rimpang temulawak (*curcuma xathorrhiza roxb.*) menggunakan fluida superkritis karbondioksida (CO₂) dan etanol = Extraction of bioactive compounds curcumin from *curcuma xathorrhiza roxb.* using supercritical CO₂ and ethanol

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Abstrak

Pada penelitian ini, pemisahan senyawa bioaktif kurkumin dari rimpang temulawak dilakukan menggunakan metode ekstraksi CO₂ fluida superkritis. Metode ekstraksi ini dilakukan dengan memvariasikan waktu ekstraksi dan volume pelarut etanol. Hasil kurkumin yang diperoleh dibandingkan dengan hasil metode ekstraksi maserasi. Sebelum ekstraksi, kadar air simplisia rimpang temulawak ditentukan dan hasil menunjukkan bahwa kadar air sebesar 9,25 . Analisis kualitatif dan kuantitatif kurkumin dikarakterisasi menggunakan kromatografi lapis tipis KLT , fourier transform infra red FTIR dan spektrofotometer UV-visible. Hasil analisis KLT menunjukkan bahwa didalam sampel terdapat senyawa kurkumin dengan nilai R_f yang sama dengan standar. Hasil FTIR memperlihatkan gugus fungsi spesifik pada standar kurkumin, maserasi, dan ekstraksi fluida superkritis CO₂, yaitu pada 3511, 3328, dan 3361 cm⁻¹ -OH dan 1619, 1620, dan 1620 cm⁻¹ C=O . Hasil spektrofotometer UV-visible menunjukkan kadar kurkumin sebesar 2,29 dengan volume etanol 30 mL selama 30 menit dan kadar kurkumin menggunakan maserasi sebesar 1,67 selama 3 24 jam. Hasil penelitian menunjukkan bahwa metode ekstraksi menggunakan CO₂ fluida superkritis lebih baik dibandingkan dengan maserasi. Hal ini dibuktikan dengan waktu singkat dan volume etanol sedikit diperoleh kadar lebih besar. Pada ekstraksi fluida superkritis dilakukan pada tekanan 72,8 atm, suhu 31,1 C yang disesuaikan dengan titik kritis pelarut CO₂.

In this research, the separation of curcumin bioactive compounds from temulawak rhizome was conducted by using supercritical CO₂ fluid extraction method. This extraction method was done by varying the duration of extraction and the mixed ethanol solvent volume. The result of the obtained curcumin was compared with the result of the maceration extraction method. Prior to the extraction, the water content of the sample powder of temulawak rhizome was determined and the results showed that the water content was 9.25 . The qualitative and quantitative analysis of curcumin were characterized by thin layer chromatography TLC , fourier transform infra red FTIR , and UV visible spectrophotometers. The results of TLC analysis showed that in the sample there were curcumin compounds with R_f values equal to the standard. FTIR results show specific functional groups in standard curcumin, maceration and supercritical CO₂ extraction, that is at 3511, 3328, dan 3361 cm⁻¹ OH and 1619, 1620, dan 1620 cm⁻¹ C O . UV visible spectrophotometer showed concentration of curcumin was 2,29 with 30 mL ethanol volume for 30 minutes and the concentration of curcumin using maceration was 1,67 for 3 24 hours. The results showed that the extraction using supercritical CO₂ fluid method was better than maceration. This is evidenced by the short time and small volume of ethanol obtained greater concentration. In the extraction of supercritical fluid carried out at a pressure of 72,8 atm, a temperature of 31,1 C adjusted to the critical point of CO₂ solvent.