

ABSTRACT

Isolation of piperine from Lampung black pepper has been carried out to determine the purity of the method used and antioxidant activity. Isolation was carried out using the soxhletation method with methanol solvent. The methanol extract of black pepper was produced as much as 58.338 g with a yield of 11.66%. Piperine was isolated from the extract as much as 10 g by the crystallization method, producing an isolate of 0.254 g with a yield of 2.54%. The determination of total alkaloids in black pepper extract was 18.52 mg/g extract, while the piperine content in the methanol extract was 40.1% and in the isolate was 99.2%. The results of the purity test with the melting point of the isolate 128-130 °C, thin layer chromatography with R_f 0.5 on the isolate and 0.49 on the standard. The purity test with high performance liquid chromatography showed a piperine isolate with a purity of 96.61%. The piperine isolate was analyzed using a UV-Vis spectrophotometer, FTIR, and mass spectrometer producing a maximum wavelength of 343 nm. Structural analysis with FTIR showed the presence of aromatic C-H functional groups at wave number 3009 cm^{-1} and aromatic C=C groups at wave number 1608 cm^{-1} 1578 cm^{-1} 1488 cm^{-1} . Stretching of C=O carbonyl in the amide group at wave number 1630 cm^{-1} , stretching of aliphatic C-H at wave number 2925 cm^{-1} , and stretching of ether group C-O at wave number 1016 cm^{-1} and 1248 cm^{-1} . Mass spectrometer showed the molecular weight of piperine was 286.1 $[M+H]^+$ with the molecular formula $C_{17}H_{19}NO_3$. The antioxidant activity of black pepper methanol extract and piperine isolate was measured using the DPPH method. The IC_{50} value for the quercetin standard was 6.68 mg/L, while the black pepper methanol extract had an IC_{50} value of 648.17 mg/L and the piperine isolate was 389 mg/L, both of which were classified as weak in antioxidant activity.

Keywords: *Piper nigrum*.L, Alkaloid, Piperine, Antioxidant

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