Phytochemical, Toxicity and Antimalarial Activity Methanol From Mangrove Plant

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Abstract

Indonesia has biodiversity that has the potential to be used for traditional medicine, including mangroves. Because mangrove plants contain bioactive compounds that act as anticancer, antimalarial, antibacterial, antinematode, antiviral, antidiabetic, and antioxidant. The purpose of this study was to determine the content of secondary metabolites, toxicity and antimalarial activity of methanolic mangrove extract of *Avicennia marina*, *Rhizophora mucronata*, and *Sonneratia Caseolaris*. Phytochemical analysis of the methanol extract of the three mangrove species was carried out using a color test, which consisted of alkaloids, flavonoids, phenolics, steroids, triterpenoids, saponins and tannins. The toxicity test (IC_{50}) of the three methanol extracts used shrimp larvae (*Artemia salina*) and the toxicity test of the larvae of the *Aedes aegypti* mosquito was carried out by probit analysis of the methanol extract of the three types of mangrove plants which was expressed by Lethal Concentration (LC_{50}). Phytochemical test results showed that the methanol extract of *Avicennia marina*, *Rhizopora mucronata*, and *Sonneratia caseolaris* mangrove leaves contained alkaloids, phenolic compounds, saponins, steroids, triterpenoids, flavonoids, and saponins. Toxicity test results against *Artemia salina* methanol extract of *Avicennia marina*, *Rhizopora mucronata*, and *Sonneratia caseolaris* mangrove leaves; obtained LC_{50} value of 256,135 ± 45.63; 48.165 ± 52.25; and 104.96 ± 9,990 ppm. The results of this toxicity test showed that the *Rhizopora mucronata* mangrove leaf extract was more toxic than the methanol extract of *Avicennia marina* and *Sonneratia caseolaris* leaves. Furthermore, the results of the antimalarial test showed that *Avicennia marina* mangrove leaf extract had an IC_{50} value of 57.43 g/ml. *Rhizopora mucronata* has an IC_{50} value of 24.118 g/mL, and *Sonneratia caseolaris* has an IC_{50} value of 21.975 g/ml. Thus the methanol extract of the fruit and leaves of the bintaro plant can be developed as a natural insecticide and the methanol extract of the fruit of the bintaro plant can be developed as an anticancer compound.

Keywords: *Phytochemical, toxicity, and antimalarial, mangrove plant*