Tannins and relate compounds from Combretaceae plants

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Abstract

BACKGROUND: Ternimalia brownii Fresen (Combretaceae) is widely used in traditional medicine to treat bacterial, fungal and viral infections. There is a need to evaluate extracts of this plant in order to provide scientific proof for it's wide application in traditional medicine system. METHODS: Extraction of stem bark, wood and whole roots of T. brownii using solvents of increasing polarity, namely, Pet ether, dichloromethane, dichloromethane: methanol (1:1), methanol and aqua, respectively, afforded dry extracts. The extracts were tested for antifungal and antibacterial activity and for brine shrimp toxicity test. RESULTS: Extracts of the stem bark, wood and whole roots of T. brownii exhibited antibacterial activity against standard strains of Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae, Salmonella typhi, and Bacillus anthracis and the fungi, Candida albicans and Cryptococcus neoformans. Aqueous extracts exhibited the strongest activity against both bacteria and fungi. Extracts of the roots and stem bark exhibited relatively mild cytotoxic activity against brine shrimp larvae with LC50 values ranging from 113.75-4356.76 and 36.12-1458.81 microg/ml, respectively. The stem wood extracts exhibited the highest toxicity against the shrimps (LC50 values 2.58-14.88 microg/ml), while that of cyclophosphamide, a standard anticancer drug, was 16.33 (10.60-25.15) microg/ml. CONCLUSION: These test results support traditional medicinal use of, especially, aqueous extracts for the treatment of conditions such as diarrhea, and gonorrhea. The brine shrimp results depict the general trend among plants of the genus Terminalia, which are known to contain cytotoxic compounds such as hydrolysable tannins. These results warrant follow-up through bioassay-directed isolation of the active principles.