In vitro cytotoxic, antioxidant, and antimicrobial activities of Mesua beccariana (Baill.) Kosterm., Mesua ferrea Linn., and Mesua congestiflora extracts

Abstract

The in vitro cytotoxicity tests on the extracts of Mesua beccariana, M. ferrea, and M. congestiflora against Raji, SNU-1, HeLa, LS-174T, NCI-H23, SK-MEL-28, Hep-G2, IMR-32, and K562 were achieved using MTT assay. The methanol extracts of Mesua beccariana showed its potency towards the proliferation of B-lymphoma cell (Raji). In addition, only the nonpolar to semipolar extracts (hexane to ethyl acetate) of the three Mesua species indicated cytotoxic effects on the tested panel of human cancer cell lines. Antioxidant assays were evaluated using DPPH scavenging radical assay and Folin-Ciocalteu method. The methanol extracts of M. beccariana and M. ferrea showed high antioxidant activities with low EC50 values of 12.70 and 9.77 μg/mL, respectively, which are comparable to that of ascorbic acid (EC50 = 5.62 μg/mL). Antibacterial tests were carried out using four Gram positive and four Gram negative bacteria on Mesua beccariana extracts. All the extracts showed negative results in the inhibition of Gram negative bacteria. Nevertheless, methanol extracts showed some activities against Gram positive bacteria which are Bacillus cereus, methicillin-sensitive Staphylococcus aureus (MSSA), and methicillin-resistant Staphylococcus aureus (MRSA), while the hexane extract also contributed some activities towards Bacillus cereus.

Keyword: Vitro cytotoxic; Antioxidant; Antimicrobial activities; Mesua beccariana (Baill.) Kosterm.; Mesua ferrea Linn.; Mesua congestiflora