Cytotoxic xanthones isolated from Calophyllum depressinervosum and Calophyllum buxifolium with antioxidant and cytotoxic activities

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Abstract

The stem bark of Calophyllum depressinervosum and Calophyllum buxifolium were extracted and examined for their antioxidant activities, together with cytotoxicity towards human cancer cells. The methanol extract of C. depressinervosum exhibited good DPPH and NO scavenging effects. The strongest BCB inhibition and FIC effects were shown by dichloromethane and ethyl acetate extracts of both species. Overall, DPPH, FRAP and FIC assays showed strong correlation with TPC. For cytotoxicity, hexane extract of C. depressinervosum possessed the strongest anti-proliferative activities towards SNU-1 cells while the hexane extract of C. buxifolium showed the strongest activity towards LS-174T and K562 cells with the IC50 values ranging from 7 to 17 mu g/mL. The purification of plant extracts afforded eight xanthones, ananixanthone (1), caloxanthone B (2), caloxanthone I (3), caloxanthone J (4) xanthochymone B (5), thwaitesixanthone (6), 1,3,5,6-tetrahydroxyxanthone (7) and dombakinaxanthone (8). All the xanthones, except 1 were reported for the first time from both Calophyllum species. The xanthones were examined for their cytotoxic effect against K562 leukemic cells. Compounds 1 and 2 showed strong cytotoxicity with the IC50 values of 2.96 and 1.23 mu g/mL, respectively. The molecular binding interaction of 2 was further investigated by performing molecular docking study with promising protein receptor Src kinase.

Keywords

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