Elucidating Anticancer Properties of Several Native Mangrove Extracts Against Breast Cancer

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Abstract:

In this study, Sonneratia alba and Bruguiera cylindrica, local mangrove species from Pengkalan Gelam, Setiu, Terengganu, Malaysia, were tested for their anticancer properties as supplementary breast cancer medications. Hexane, ethyl acetate, and methanol twig extracts of mentioned sp. were tested against breast cancer (MCF-7) and normal cells (L6). MTS assay revealed that B. cylindrica hexane extracts (BCH), S. alba hexane (SAH), and S. alba ethyl acetate (SAEA) show strong to intermediate IC50 against MCF-7 with values of 7.76 µg/ml, 3.47 µg/ml, and 27.8 ug/ml, respectively. While vincristine sulphate showed a very strong IC50 (0.10447µg/ml) towards normal cells, mangrove extracts proved to be non-toxic to normal cells. The cancer cells were conclusively shown to experience favored apoptosis when treated with BCH, SAH, and SAEA at achieved IC50 through Annexin V FITC apoptosis assay. With achieved BCH, SAH, and SAEA IC50 dosages, the trypan blue exclusion assay revealed that the viability of MCF-7 cells had dropped <50%. SAEA was found to be a strong anti-oxidant agent with an IC50 (0.125 mg/mL) compared to control quercetin (0.157 mg/mL). The phytochemicals found in mangroves, including phenols, alkaloids, flavonoids, and anthraquinones, make this species potentially useful as anti-cancer and anti-oxidant agents in complementary cancer therapies.