

Effect of Clerodendrum Species on Oxidative Stress with Possible Implication in Alleviating Carcinogenesis

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Abstract : In the present study three species of Clerodendrum; Clerodendrum indicum, Volkameria inermis and Clerodendrum colebrookianum were used to investigate the possible activity against oxidative stress. A detailed in-vivo and in-vitro antioxidant profiling, directly associated with inflammation-related carcinogenesis, has been executed with a motive to evaluate the free radical scavenging activity of Clerodendrum extract. Measurement of cell viability and ROS generation in HEK-293 (Human Embryonic Kidney Cell Line) cells was also estimated. The immune cell proliferative properties (MTT) and in-vitro assay for evaluation of their antioxidant activities including hydroxyl radical, nitric oxide, singlet oxygen, peroxynitrate and hydrogen peroxide, etc. were investigated. GC-MS and FTIR analyses have been performed to identify the active biological compounds. These active biological compounds were further studied to assess their potential medicinal properties, aided by molecular docking and interaction analysis between the active compounds and different proteins related to oxidative stress leading to progression of carcinogenesis. The research article clearly demonstrates the role of ROS in various phases of carcinogenesis. Therefore, the antioxidant and free radical scavenging capacity of all the Clerodendrum species might prove beneficial for the immune system. It might be concluded that this plant species offers great promise for cancer prevention and therapy due to the presence of several bioactive compounds and potent antioxidant capacity of C. colebrookianum.

Keywords : antioxidant, cancer, oxidative stress, reactive oxygen species (ROS)

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