Research Article

Antiapoptotic and Antioxidant Properties of Orthosiphon stamineus Benth (Cat’s Whiskers): Intervention in the Bcl-2-Mediated Apoptotic Pathway

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Antiapoptotic and antioxidant activities of aqueous-methanolic extract (CAME) of Orthosiphon stamineus Benth(OS), and its hexane (HF), chloroform (CF), n-butanol (NBF), ethyl acetate (EAF) and water (WF) fractions were investigated. Antioxidant properties were evaluated using the assays of Folin-Ciocalteu, aluminiumtrichloride, β-carotene bleaching and DPPH. The role of OS against hydrogen peroxide induced apoptosis on MDA-M231 epithelial cells was examined using MTT assay, phase contrast microscope, colorimetric assay of caspase-3, western blot and quantitative real-time PCR. Results showed that EAF showed the highest total phenolic content followed by CAM, E, NBF, WF, CF and HF, respectively. Flavonoid content was in the order of the CF > EAF > HF > CAME > NBF > WF. The IC50 values on DPPH assay for different extract/fractions were 126.2 ± 23, 31.25 ± 1.2, 15.25 ± 2.3, 12.66 ± 1.5 μg/ml for HF, CF, EAF, NBF, WF and CAME, respectively. OSreduced the oxidation of β-carotene by hydroperoxides. Cell death was dose-dependently inhibited by pretreatment with OS. Caspase-3 and distinct morphological features suggest the anti-apoptotic activities of OS. This plant not only increased the expression of Bcl-2, but also decreased Bax expression, and ultimately reduced H2O2-induced apoptosis. The current results showed that phenolics may provide health and nutritional benefits.