

Research Article

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

Siddig Ibrahim Abdelwahab,¹ SyamMohan,² ManalMohamed Elhassan,² Nabil Al-Mekhlafi,² Abdelbasit AdamMariod,³ Ahmad Bustamam Abdul,² Mahmood Ameen Abdulla,⁴ and KhalidM. Alkharfy⁵

¹Department of Pharmacy, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

²Institute of Biosciences, Universiti Putra Malaysia, 43400 Serdang, Malaysia

³Food Science and Technology Department, College of Agricultural Studies, Sudan University for Sciences and Technology, P.O. Box 71, Khartoum North, Sudan

⁴Department of Molecular Medicine, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

⁵Department of Clinical Pharmacy, College of Pharmacy, King Saud University, Riyadh 11451, Saudi Arabia

Correspondence should be addressed to Siddig Ibrahim Abdelwahab, siddigroa@yahoo.com

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Antiapoptotic and antioxidant activities of aqueous-methanolic extract (CAME) of *Orthosiphonstamineus* 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 CAME, 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, 13.56 ± 1.9, 23.0 ± 3.2, and 16.66 ± 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.