

Novel Curcumin Analogs Modeling, Synthesis, Tubulin polymerization and Cytotoxic assays. Iten M. Fawzy, Khairia M. Youssef, Nasser S.M. Ismail, J.Gulbo, Khaled A.M. Abouzid

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Abstract

Curcumin [1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadien-3,5-dione] is the major constituent of turmeric powder extracted from the rhizome of the plant *curcuma longa*. Extensive research conducted within the past years has revealed that curcumin is a highly pleiotropic molecule that modulates and interacts with a diverse range of molecular targets and hence it possess anti-proliferative activities against tumor cells in vitro, anti-inflammatory, antibacterial, antiviral, anti-hepatotoxic, hypotensive and anti-cholesterolemic activities. Since cancer is a result of the dys-regulation of multiple cell signaling pathways so curcumin's multi-targeting ability may be the key to its therapeutic potential against cancer. Also the great similarity in structure between curcumin analogs and chalcones inspired their testing against tubulin enzyme activity. Recent research revealed that chalcones possess cytotoxic activity associated with tubulin inhibition and interference with microtubule formation, which is essential in cellular processes such as mitosis and cell replication

Annual International Conference on Pharmaceutical Sciences, - 2014, January