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Synthesis and screening of ursolic acid-benzylidine derivatives as potential anti-cancer agents

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Ursolic acid present abundantly in plant kingdom is a well-known compound with various promising biological activities including, anti-cancer, anti-inflammatory, hepatoprotective, antiallergic and anti-HIV properties. Herein, a library of ursolic acid-benzylidine derivatives has been designed and synthesized using Claisen-Schmidt condensation of ursolic acid with various aromatic aldehydes to develop potent antitumor agents. The compounds were evaluated against a panel of four human carcinoma cell lines including, A-549 (lung), MCF-7 (breast), HCT-116 (colon), THP-1 (leukemia) and a normal human epithelial cell line (FR-2). The results from MTT assay revealed that all the compounds displayed high level of antitumor activities compared with the triazole analogs (previously reported) and the parent ursolic acid. However, compound **3b**, the most active derivative was subjected to mechanistic studies to understand the underlying mechanism. The results revealed that compound **3b** induced apoptosis in HCT-116 cell lines, arrest cell cycle in the G1 phase, caused accumulation of cytochrome c in the cytosol and increased the expression levels of caspase-9 and caspase-3 proteins. Therefore, compound **3b** induces apoptosis in HCT-116 cells through mitochondrial pathway.

Biography

Wajaht Amin Shah completed his PhD in Natural Product Chemistry. He has published papers in various international journals on Natural Product Chemistry and Synthetic Chemistry. He has produced various Doctoral and Predoctoral students under his supervision. He is presently working as Associate Professor in the Department of Chemistry, University of Kashmir and is actively involved in guiding PG students and Doctoral students.

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