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Short communication

Synthesis and cytotoxic effects of (E)-3-(2,3-dimethoxyphenyl)-1-(5-methylfuran-2-yl) prop-2-en-1-one in MDA-MB231 and MCF-7 breast cancer cell lines

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ABSTRACT

A chalcone derivative, (*E*)-3-(2,3-dimethoxyphenyl)-1-(5-methylfuran-2-yl)-prop-2-en-1-one (DMMF) was synthesized and evaluated against various cancerous cell lines including colon adenocarcinoma (HT-29), myloplasticleukemia (HL60), breast cancer (MCF-7 and MDA-MB231), normal hepatic cell (WRL-68) and normal breast cell (MCF-10A). The structure of DMMF was determined by EI-MS, ^{1}H NMR and single X-ray crystallographic techniques. The DMMF possessed the highest cytotoxic effect against MCF-7 breast cancer cell (2.01 ± 1.53 μg/mL) and lowest against normal hepatic WRL-68 and breast cell lines after 24 h of treatment. Induction of apoptosis and regulation of cell cycle progression results indicates the significant increase in early apoptosis and G2/M arrest after 48 h of treatment in MCF-7 cells. Meanwhile, in MDA-MB231 cells, there was an increase in Sub G0/G1 cells population and early/late apoptotic cells upon treatment with DMMF. Additionally, DMMF effectively induced G2/M cell cycle arrest in MCF-7 cells and apoptosis in both MCF-7 and MDA-MB231 cells.