THIOAMIDE DERIVATIVE-INDUCED CYTOTOXIC EFFECT AND PHOSPHATIDYLSERINE EXTERNALIZATION IN HUMAN LIVER CARCINOMA (MCF-7) CANCER CELLS

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Abstract: Thioamide is one of antithyroid drugs prescribed in the treatment of hyperthyroidism. Thioamide derivative is currently used for the treatment of thyroid disease, tuberculosis, and leprosy. Although published studies indicate that thioamide derivative has medicinal properties effective against many diseases other than liver cancer, the molecular mechanisms under which this compound exerts its toxicity in cancer cells remain largely unknown. In the present study, we use human liver carcinoma (HepG2) cells as a test model to evaluate the cytotoxicity of thioamide derivative. To achieve this goal, cell survival was determined by MTT assay. The expression of annexin V was measured by flow cytometric analysis. Human liver carcinoma (HepG2) cells were treated with different doses of thioamide derivative for 48 hours. Results from MTT assay indicate that thioamide derivative gradually reduce the viability of HepG2 cells in a dose-dependent manner, showing LD50 value of about 13.58 µM, upon 48 h of exposure. The flow cytometric assessment (Annexin V FITC/PI) showed a strong dose-response relationship between thioamide derivative exposure and annexin V positive cells undergoing early stage apoptosis in HepG2 cells. Taken together, our results indicate that phosphatidylserine externalization was involved in thioamide derivative induced toxicity to HepG2 cells.

Keywords: Thioamide, HepG2 cells; MTT, annexin V, flow cytometry

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