MODULATION OF APOPTOSIS AND NECROSIS IN HUMAN LIVER CARCINOMA (HEPG₂) CELLS BY THIOAMIDE

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Abstract: Thioamide is one of a group of antithyroid drugs prescribed in the treatment of hyperthyroidism. Thioamide derivative is currently used for the treatment of thyroid disease, tuberculosis, and leprosy. Recent in vitro experiment in our laboratory demonstrated thioamide is highly cytotoxic to human liver carcinoma (HepG₂) cells. 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 induces apoptosis of cancer cells remain largely unknown. In the present study, we proposed to use human liver carcinoma (HepG₂) cells as a test model to evaluate the basis apoptotic mechanism of thioamide derivative. To achieve this goal, 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 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 derivative, HepG₂ cells; flow cytometry, apoptosis

Acknowledgements: This research was financially supported in part by a grant from the Bridges to Baccalaureate Degree Program (BBDP) and in part by a grant from the National Institutes of Health (Grant No. 2G12RR013459-11), through the RCMI-Center for Environmental Health at Jackson State University.