ARSENIC-INDUCED CYTOTOXICITY AND APOPTOSIS IN HEPATOCELLULAR CARCINOMA (HEPG₂) CELLS

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Abstract: Arsenic is a well-known toxic and carcinogenic agent associated with various human malignancies, including skin, lung, liver, kidney and bladder cancers. It has been shown to induce apoptosis in a variety of malignant cell lines, but the precise mechanisms involved in arsenic toxicity and carcinogenicity are not well elucidated. In this study, we used hepatocellular carcinoma (HepG₂) cells as a model to evaluate toxicity and induction of apoptosis associated with exposure to arsenic trioxide (ATO). The MTT assay and annexin-V/propidium iodide staining were used to assess cell viability and apoptosis, respectively. The results of the MTT assay demonstrated that ATO significantly reduced the viability of HepG₂ cells in a dose-dependent fashion, showing a LD₅₀ value of about 8.5 μg/mL, upon 24 hours of exposure. In regard to annexin V assay experiment, we observed annexin V positive cells expression in ATO-treated upon 2 hr of exposure. However, we did not detect any annexin V positive cells expression at 24 hr of ATO exposure. Based on the 24 hr cytotoxic effect of ATO to HepG₂ cells, further studies are needed to elucidate the apoptotic potential of compound to HepG₂ cells.

Keywords: arsenic trioxide, MTT, apoptosis, annexin V, HepG₂ cells

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