IN-VITRO CYTOTOXIC EFFECTS OF ARSENIC TRIOXIDE AND CHOLECALCIFEROL (VITAMIN D) IN HUMAN LUNG CARCINOMA (A549) CELLS

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Abstract: Lung cancer is the second most potent cancer in the United States, plaguing approximately 200,000 people and causing over 150,000 cancer related deaths per year. There has been great advancement in the treatment of lung cancer; however the side effects can be very severe. As a consequence, scientists are continually searching for alternative, less harmful treatment options. Previous studies in our lab have shown that arsenic trioxide is both cytotoxic and genotoxic to various cancer cell lines (HT-29, MCF-7, and A549). Research has also shown that cholecalciferol, also known as Vitamin D, is capable of inhibiting cancer cell growth. The goal of our study was to determine the combined effect of arsenic trioxide and cholecalciferol on the cytotoxicity of human lung carcinoma (A549) cells. To achieve this, A549 cells were exposed to 6 µg/mL of arsenic trioxide and various concentrations of cholecalciferol (0, 0.5, 1.5, 3, 6, and 12 µg/mL) for 48 hours. Cell viability was determined by the MTS and Trypan Blue assays, respectively. Data from both assays revealed a dose-dependent cytotoxic response at low to moderate levels of exposure.

Keywords: arsenic trioxide, cholecalciferol, MTS assay, Trypan Blue assay, Cytotoxicity

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