Cytotoxic Effects Induced by 3-Nitrochalcone in HepG2 Human Hepatoma Cells.


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The hepatocellular carcinoma (HCC) is the fifth most prevalent cancer worldwide and the conventional treatments remain limited. Hydroxylated-chalcones, included in the class of flavonoids, are promising antitumor compounds which widely occur in the plant kingdom. However, the effects of nitrochalcones on human hepatocellular carcinoma cells (HepG2) are unknown. The aims of this work are to evaluate the effects of 3-nitrochalcone synthetic on cellular viability, cell cycle progression and reactive oxygen species (ROS) levels. Cell viability was measured by MTT assays upon treatment of HepG2 cells with 3-nitrochalcone at different concentrations (0.5-20 µM) and different incubation times. We observed 16 and 37% reduction in cell viability when HepG2 cells were treated with 10 and 20 µM 3-nitrochalcone for 48h respectively. After 72 hours, we observed a reduction in cell viability induced by 3-nitrochalcone at 10 and 20 µM reaching 54 and 84% respectively. 3-nitrochalcone had no effect in HepG2-cell viability at 24h of treatment. Cell cycle analysis by flow cytometry showed an increase in the percentage of HepG2 cells into subG1 phase of the cell cycle after 48h and 72h of treatment with 3-nitrochalcone (20 µM). Measurements of ROS with DCF-DA probe showed that treatment of HepG2 cells with 3-nitrochalcone (5, 10 and 20 µM) at 48h decreased intracelluar ROS levels, however after 72 hours of 3-nitrochalcone treatment its levels return to their baseline values. The results allow us to conclude that 3-nitrochalcone causes reduction in cell viability and changes in ROS levels in a time and dose – dependent manner.

Word Keys: HCC, 3-Nitrochalcone, HepG2,

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