Article Submission Id: 418

Recommended For: Poster

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Abstract: Colon adenocarcinoma is a growing public health concern with increasing rate of incidence in developing countries. Although screening methods and therapeutic options have been improved, patients with colon cancer still suffer from disease recurrence. Auraptene (AUR) is the most abundant prenyloxycoumarin identified in nature with wide range of pharmacological properties. Beside antioxidantive, antigenotoxic and antimicrobial effects, AUR induces cancer chemopreventive effects in animal models. Since research in the field of colon cancer is focused on introduction of more effective anticancer agents, the goal of present study was to determine cytotoxic effects of AUR in mouse colon adenocarcinoma cells (CT26 cell line). In this regard, AUR was first synthesized by a reaction between 7-hydroxycoumarin and transgeranyl bromide, its purification was carried out by column chromatography, and its structure was confirmed by nuclear magnetic resonance spectroscopy. Then, CT26 cells, as well as mouse normal fibroblasts (NIH/3T3 cell line), were treated with increasing concentrations of AUR for 24, 48 and 72 hours, and viability of cells was evaluated by MTT assay. Result of this study indicated that the IC50 values of AUR in CT26 and NIH/3T3 cells were >30 µg/ml and<20 µg/ml, respectively. To determine whether AUR has synergic effects with ionizing radiation, our plan is to examine viability of CT26 cells upon AUR treatment (in concentrations less than its IC50) and radiation exposure. In case AUR improves efficacy of radiotherapy, it could be considered as an effective coumarin derivative for future in vivo experiments.

KeyWords: Colon adenocarcinoma, Auraptene, Cytotoxicity