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In vitro investigation of diversin cytotoxicity on 5637 cells

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BACKGROUND: Chemotherapy is one of the main therapeutic strategies for treatment or prevention of cancer recurrence. In this study the cytotoxic effects of diversin (a sesquiterpene coumarin with prenyl group) isolated from *Ferula diversivittata* was investigated on 5637 cells, a TCC sub-line. This genus belongs to the Umbelliferae family and can grow easily in former USSR and Iran.

RESULTS: diversin was isolated from air-dried roots of *F. diversivittata* collected from Hezarmasjed mountains, Khorassan Razavi province, Iran. TCC cells grown in 96 well plates were treated with different concentrations of diversin (10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 µg/ml). Equal amounts of DMSO (dimethylsulfoxide) were also used as controls and level of diversin cytotoxicity was evaluated after 24, 48 and 72 hours of drug administrations, by MTT assay. IC₅₀ of diversin was determined as 70 µg/ml and 40 µg/ml after 48 and 72h of treatment respectively. Cell death and morphological changes in above mentioned concentrations were in agreement with MTT assay.

CONCLUSION: Cytotoxic effects of many coumarins have been shown previously. In this study the cytotoxic effects of diversin was clearly observed even at low concentrations on TCC cells. Investigating the cytotoxic effects of this compound on normal cells and also analyzing the expression levels of specific genes could reveal the molecular mechanism of action of this compound.

Keywords: cytotoxicity, diversin, 5637 cells, MTT assay