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### Investigation of cytotoxicity and anti-cancer effects of 7-isopentenylcoumarin *in vitro*

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**BACKGROUND:** Bladder cancer is the second common cancer of genitourinary tract. Transitional cell carcinoma (TCC) covers more than 90% of bladder cancers and its specific treatment remains a challenge. Coumarins are a large group of natural compounds that their biological effects have always been taken into consideration. Here we report cytotoxicity and anti-cancer effects of 7-isopentenylcoumarin in TCC cells.

**RESULTS:** In order to investigate the effects of this compound, different concentrations from 10 to 100 µg/ml were prepared using dimethylsulfoxide (DMSO) as solvent. TCC (as cancerous cells) and HDF cells (as normal cells) were grown and treated with these concentrations and the effects were evaluated after 24, 48 and 72 hours of treatments by MTT assay. The morphological changes of the nuclei were also observed by DAPI staining. Results showed that 7-isopentenylcoumarin reached its IC<sub>50</sub> at concentration of 65 µg/ml after 72 hours on TCC cells. On the other hand, this compound did not have any effect on HDF cells. DAPI staining showed considerable morphological changes, nuclear fragmentation and chromatin condensation in TCC cells treated with 65 µg/ml of 7-isopentenylcoumarin in comparison to controls.

**CONCLUSION:** The results indicated that 7-isopentenylcoumarin had cytotoxic effects on TCC cells, but not on normal HDF cells and therefore it might be considered as an anti-tumor agent. More investigations are required to confirm the reproducibility and mechanism of this observation in other cell lines.

**Key words:** 7-isopentenylcoumarin, TCC cells, MTT assay