EVALUATION OF CYTOTOXIC POTENTIAL OF TAXIFOLIN AGAINST HUMAN REPRODUCTIVE SYSTEM CANCER CELL LINES

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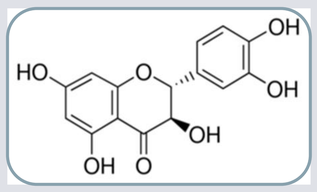
Introduction

There is accumulating evidence that flavonoids could exert antioxidant, anti-inflammatory, immunomodulatory and strong anticancer activities. The promising results stimulate the development of flavonoids and their synthetic analogs for cancer prevention and chemotherapy. Taxifolin (dihydroquercetin, DHQ) is a member of the phytonutrient family that has shown antiproliferative effects and enhanced apoptosis in different multidrug resistant cancer cell lines. However, the potential of this flavanonol against human reproductive system cancer cell lines has not been explored yet.



Aim

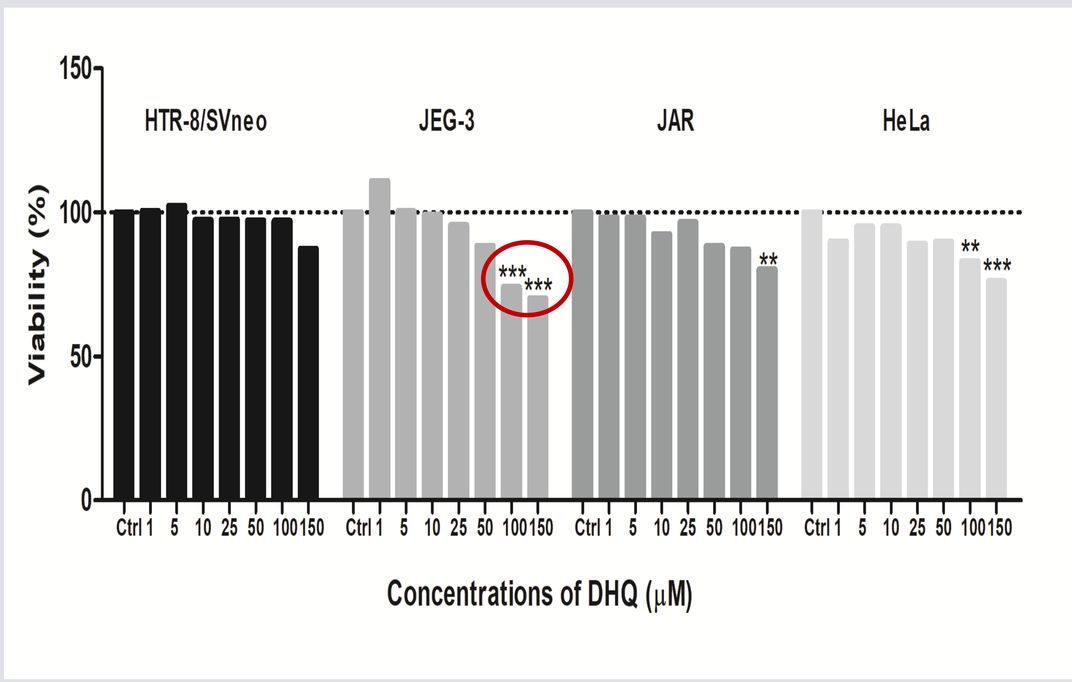
to explore taxifolin ((2R,3R)-3,3′,4′,5,7-Pentahydroxyflavanone, (2R,3R)-Dihydroquercetin) for potential cytotoxic activity against two choriocarcinoma cell lines and cervical cancer cell lines, as well as in the normal extravillous trophoblast cells as control cell line.

Method

The cytotoxicity of taxifolin was evaluated by using the 3-[4,5-dimethylthiazole-2-yl]-2,5-diphenyltetrazolium bromide (MTT) assay.

Cell lines

- **HTR-8/SVneo trophoblast cell line, established from the human first trimester placenta explant cultures immortalized by SV40 large T antigen (provided by Dr Charles H. Graham, Queen's, Kingston, Canada).**
- **JEG-3 choriocarcinoma cell line (ECACC, Salisbury, UK)**
- **JAR choriocarcinoma cell line (ATCC, Virginia, USA)**
- **HeLa Human Cervical Adenocarcinoma (ATCC, Virginia, USA)**



Conclusion

These promising results provide first data on the anticancer potential of taxifolin in human reproductive system cancer cells, but need to be verified through *in vivo* experimental approach as well as through elucidation of the molecular mechanisms involved.

After 24 h incubation with taxifolin, it could be observed that normal trophoblast cells respond to treatment differently from the cells of the malignant phenotype.

There was no significant reduction in cell viability in HTR-8/SVneo cells in any of the used concentrations. However, the highest concentrations (100 and 150 μM) significantly reduced cell number in all three cancer cell lines (JEG-3, JAR and HeLa). The most pronounced cytotoxic effect (30% viability reduction vs. control) was observed in JEG-3, cancer cell line with the highest metastatic potential out of those used in this research.

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