Antiproliferative and pro-apoptotic effects of the phytochemical Indicaxanthin on human intestinal (Caco-2) and hepatic (Ha 22T) cancer cell lines.

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In the present study antiproliferative effects of Indicaxanthin (Ind), a highly bioavailable pigment from the fruits of Opuntia ficus-indica (1), were investigated on a number of human cancer cell lines including hepatocarcinoma cells (HepG2, Ha22T, HUH 7), breast cancer cells (MCF7), cervix epithelial carcinoma (HeLa), and colorectal carcinoma cells (Caco-2). Cytotoxicity of Ind, in a concentration range between 25 to 100 μM, was evaluated by Trypan blue exclusion method and MTT assay. Ind caused a clear dose- and time-dependent decrease in the proliferation of Caco-2 and Ha 22T cells with an $IC_{(50)}$ of about 50 μM, with minor effect on the other cell lines. Flow cytometric analysis after Annexin V-FITC and propidium iodure double staining, at 24, 48 and 72 h of treatment with 100 μM Ind, showed a pro-apoptotic effect of the pigment at 48 and 72 h. Effect of Ind on DNA methylation investigated on DNA from Ha22T cells line and Caco2 cells line at 48 h of treatment with 10 μM Ind, using MESAP-PCR (Methylation-Sensitive Arbitrarily-Primed Polymerase Chain Reaction) (3) showed that Ind induces a slight global demethylation.
While antiproliferative effects of indicaxanthin add further value to the nutritional characteristics of the fruits of O. ficus-indica (2), our results also are consistent with the emerging role of dietary phytochemicals on the epigenetic regulation of gene expression.

References

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