

Effects of oleuropein and peracetylated oleuropein on thyroid cancer cells

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Oleuropein and its derivatives have shown many biological properties, and currently represent promising novel therapeutics for the treatment of several diseases, including neoplasia. In this study we evaluated the antiproliferative and antioxidant effects of oleuropein (OLE) and its peracetylated derivative (peracetylated oleuropein, Ac-OLE) on TPC-1 and BCPAP cells, two human thyroid tumour cell lines. Cells were treated with OLE and Ac-OLE at concentrations of 10 μ M, 50 μ M and 100 μ M for 48h. The effects on viability were evaluated by MTT, cell counting and Trypan blue exclusion assay. Also their action on cell cycle were analyzed by FACS. The antioxidant effects were analyzed by measuring the production of radical oxygen species (ROS). We observed that OLE inhibited significantly the proliferation (~15, ~30 and 40% with 10, 50 and 100 μ M vs control, respectively) in both cell lines and determined a reduction of ROS levels. A stronger effect was found with Ac-OLE both in inhibiting the growth (70% reduction at 100 μ M in both cell lines) through a block of cells in phase G2/M and in reducing ROS levels, in particular on BCPAP cells. This study demonstrates that OLE and especially Ac-OLE inhibit *in vitro* thyroid cancer cell proliferation and exert antioxidant effects. Additional studies *in vivo* are required to evaluate the possible use of these molecules as novel therapeutics in thyroid cancer.