OLEA EUROPAEA COMPOUNDS IN TUMOUR INITIATION AND PROGRESSION OF BREAST CANCER CELLS

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It has been showed that modifications in dietary intake, and specifically the benefits of the Mediterranean diet, can importantly increase life expectancy, reducing the risk of developing cancer and other major chronic diseases and improve quality of life and well-being [1].

Several studies assigned a highest reduction in tumour incidence to monounsaturated and saturated vegetable lipids, such olive oil [2]. On these bases, in this work we focused on the comprehension of initiation and progression phases linked to food habits in breast cancer.

Breast cancer is the most frequently diagnosed cancer (23% of the total) and the main reason of tumour death among females (14%) [WHO 2012]. *Olea europaea* leaves, oil and fruits have a potential effect to inhibit proliferation and to induce apoptosis in different cancer cell lines. The main mechanisms contributing to these properties entail anti-inflammatory and antioxidant actions, related to their ability to scavenge free radicals and prevent cellular injury [3].

Among *Olea europaea* compounds, olive polyphenols received great attention, particularly the major one called Oleuropein (OL) -present at high levels in the leaf- as well as its potent antioxidant metabolite, Hydroxytyrosol [3, 4].

In this respect, our research focuses in the analysis of Olive leaf extracts rich in OL (~50%) as a potential cell viability reducing agent on a malignant triple negative breast cancer line, ***MDA-MB-231***. This model represents the claudin-low/mesenchymal subtype, that overexpresses stem cell-enriched genes and has a natural tendency to metastasize to brain and lungs [5].

Cell viability was measured by MTS after 24, 48 and 72h of treatment followed by the cell cycle analysis by Flow Cytometry at 24 and 72h. Preliminary results seem to indicate that Olive extract at high concentrations (200-400µg/mL) can reduce ***MDA-MB-231*** cell viability and induces a block of the cycle in the S/G2 phase, but further experiments are needed to elucidate better conclusions.

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