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OPUNTIA FICUS-INDICA (L.) MILLER CLADODES: EFFECT ON DIFFERENT TYPES OF CANCER CELL LINES

Nelson ANDRADE[1], Liliana ESPÍRITO SANTO[1], Juliana A. BARRETO PEIXOTO[1], Cláudia SILVA[2], Rita C. ALVES[1], M. Beatriz P. P. OLIVEIRA[1], Fátima MARTEL[2]

[1]REQUIMTE/LAQV, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, Porto, Portugal
[2]Department of Biomedicine – Unit of Biochemistry, Faculty of Medicine of Porto, University of Porto, Porto, Portugal

Opuntia ficus-indica (L.) Miller is a perennial, succulent, and branched shrub that has been appointed as an interesting sustainable and functional food source, in part due to its cladodes, which represent the main by-product of this culture. These cladodes are a source of several bioactive compounds presenting, besides others, anti-tumoral effects1.

The aim of this work was to explore the anticarcinogenic properties of an aqueous extract of O. ficus-indica cladodes. For this, 3 distinct human cancer cell lines were used: a breast cell line (MCF-7), a pancreatic cell line (AsPC-1), and a colorectal cell line (HT-29). Cells were exposed to the extract (1 mg/mL) or to its vehicle for 24 h. Cell viability was determined by measuring cellular leakage of lactate dehydrogenase (LDH) to the extracellular culture medium2. Cell proliferation rates were determined with the 3H-thymidine incorporation assay2. Culture growth was determined using the sulforhodamine B (SRB) assay, which reports on intracellular protein content2.

The results revealed that the cladodes extract was cytotoxic (LDH) only to HT-29 cells. Moreover, culture growth (SRB) was not disturbed by the extract in these cell lines. These 3 cell lines saw their proliferation rates (3H-thymidine incorporation) significantly reduced by the extract (to 70%, 72%, and 78% of control - AsPC-1, MCF-7, and HT-29, respectively).

These results show that the O. ficus-indica cladodes extract (1mg/mL) exerted antiproliferative effects in AsPC-1, MCF-7, and HT-29, being

cytotoxic only to HT-29 cells. Overall, this extract showed an appealing antineoplastic potential and, therefore, it should be further explored and studied as a cheap complementary agent.

Keywords: Food sustainability, Anticarcinogenic potential, Opuntia ficus-indica cladodes valorization, MCF-7, HT-29, and AsPC-1 cancer cell lines

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