

P37

Evaluation of *Opuntia Ficus Indica* (OFI) extract as a potential natural radioprotector

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Many natural substances and extracts have been tested for the capacity to mitigate ionizing radiation-induced damage in normal cells, due to their efficacy and lower side effects and toxicity compared to synthetic radioprotectors. *Opuntia Ficus Indica* (OFI) is an edible plant growing in arid and semiarid climates with a wide distribution over the world. Besides its importance as a dietary source due to the nutritional value of both OFI fruits and cladodes (rich in minerals, vitamins and antioxidants), the extracts obtained from different parts of the plant (mainly flowers, fruits and seeds) have been gaining increasing attention due to their promising health-promoting properties. In this context, also extracts obtained from OFI cladodes have already been proven to exert cytoprotective, antioxidant, antigenotoxic, antitumoral and anti-inflammatory activities, opening to the possibility to exploit significant amounts of OFI waste products for health protection applications.

The aim of the present study was to evaluate the possible radioprotective effect of an extract obtained from OFI cladode in human peripheral blood lymphocytes (PBLs) undergoing exposure to ^{60}Co γ -rays. Such extract has been prepared by cutting the cladodes in cubic pieces and macerating in distilled water for 24 hours in the dark. Subsequently the macerated material was separated by different filtration stages and characterized by HPLC.

Whole blood samples from healthy volunteers were pre-treated with different non-cytotoxic concentrations of OFI extract for 24 hours; after OFI incubation, the PBLs were exposed to ^{60}Co γ -rays (0.5 and 1 Gy). Radiation-induced chromosome damage was evaluated by the Cytokinesis-Block Micronucleus (CBMN) assay.

The analysis of the results is currently ongoing, in order to evaluate the possible protective effect of OFI extract against radiation-induced increase of micronuclei that might be used in further studies to demonstrate the health-related applications of OFI waste products as powerful radioprotective agent.

Keywords:

Opuntia Ficus Indica (OFI); cladode extract; natural radioprotector; ionizing radiation; micronucleus assay.