

Toxicological evaluation of *Opuntia dillenii* cladode extract, fractions and its alpha pyrones based on *in vivo* and *in vitro* assays.

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Objective: *Opuntia dillenii* (Nagphana) is one of the edible plants, traditionally used against various inflammatory diseases worldwide including Pakistan. Despite of its popular medicinal uses, scientific information with regards to the safety profile are required for its use as alternate medicine. Therefore, the present study aimed to address the toxicological study of *O. dillenii* cladodes methanol extract, its fractions, and pure compounds: opuntiol and opuntioside.

Methodology: *O. dillenii* cladode derived test agents were evaluated for toxicological assessment including sub-acute toxicity assay was performed by oral administration of methanol extract (5 g/kg) in mice for seven consecutive days. Followed by determination of their hematological and biochemical parameters (liver enzymes and creatinine) and histological examination of liver and kidney. Cytotoxic effect of different concentrations of test agents were evaluated by using rat neutrophils viability assay (5×10^6 cells/ mL) and HEK-293 human cells using MTT assay. In genotoxicity assay rat bone marrow micronucleus and cytochalasin-B block micronucleus (CBMN) test were performed *via* DNA isolation and agarose gel electrophoresis.

Result: *O. dillenii* methanol extract did not elicit any visible behavioral changes or mortality occurred during 7 days of observation similar to control. The extract also displayed non-significant difference ($p < 0.05$) in hematological and biochemical parameters and histological studies in the treated group compared to control group. Moreover, test agents were found to be non-cytotoxic against neutrophils (96% from 0-3 h) and human HEK cells. Consistently, in genotoxic assay test agents were also depicted non- significant in micronucleus induction.

Conclusion: Results obtained in this study suggest that edible *O. dillenii* derived test agents are relatively safe when administered orally.

Key words

Opuntia dillenii, Opuntiol, Opuntioside, Sub-acute toxicity, Genotoxicity, Hematological indices, Hepatotoxicity, Micronuclei test, Cytotoxicity, Renal toxicity