SAGE Open Medicine
Impact Factor: 2.3 / 5-Year Impact Factor: 2.7 | Journal Homepage | Submit Paper

Open access | Research article | First published online December 8, 2023

Pinostrobin attenuates azoxymethane-induced colorectal cytotoxicity in rats through augmentation of apoptotic Bax/Bcl-2 proteins and antioxidants

Bassam Ali Abed Wahab, Nur Ain Salehen, [...], and Yahya A Almutawif (+10) View all authors and affiliations

All Articles | https://doi.org/10.1177/20503121231216585

Abstract

Objectives:

Pinostrobin (5-hydroxy-7-methoxyflavanone; PN) is a natural active ingredient with numerous biological activities extensively utilized in tumour chemotherapy. The present study investigates the chemo-preventive potentials of PN on azoxymethane-mediated colonic aberrant crypt foci in rats.

Methods:

Sprague Dawley rats clustered into five groups, normal control (A) and cancer controls were subcutaneously injected with normal saline and 15 mg/kg azoxymethane, respectively, and nourished on 10% tween 20 and fed on 10% tween 20; reference control (C), injected with 15 mg/kg azoxymethane and injected (intraperitoneal) with 35 mg/kg 5-fluorouracil (5-FU); D and E rat groups received a subcutaneous injection of 15 mg/kg azoxymethane and nourished on 30 and 60 mg/kg of PN, respectively.

Results:

The acute toxicity trial showed a lack of any abnormal signs or mortality in rats ingested with 250 and 500 mg/kg of PN. The gross morphology of colon tissues revealed significantly lower total colonic aberrant crypt foci incidence in PN-treated rats than that of cancer controls. Histological examination of colon tissues showed increased aberrant crypt foci availability with bizarrely elongated nuclei, stratified cells and higher depletion of the submucosal glands in cancer controls. PN treatment caused positive modulation of apoptotic (Bax and Bcl-2) proteins and inflammatory cytokines (TNF-α, IL-6 and IL-10). Moreover, rats fed on PN had significantly higher antioxidants (superoxide dismutase) and lower malondialdehyde concentrations