

EVALUATION OF LUTEOLIN IN THE CHEMOPREVENTIVE EFFECTS OF AZOXYMETHANE-INDUCED ABERRANT CRYPT FOCI IN RAT

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ABSTRACT

Colorectal cancer is a common malignancy and a leading cause of cancer death worldwide. Luteolin is an important flavonoid with a potential anticancer effect. The aim of the present study is to evaluate the chemoprotective effects of luteolin against azoxymethane-induced (AOM) aberrant crypt foci (ACF) in rat's colon. Five groups of rats, Group 1 (normal control) was received subcutaneous injection sterile distilled water, once weekly for 2 weeks. Normal control rats were continued on Tween 20 feeding for 8 weeks. Group 2 -5 were received subcutaneous injection of AOM, 15 mg/kg body weight, once weekly for 2 weeks. Group2, cancer group were continued on 6 mg/kg cisplatin drug feeding, and experimental groups continued on 5 and 20 mg/kg Luteolin feeding, respectively. All rats were sacrificed after 8 weeks. Colons were evaluated grossly and histopathology for ACF. Rats fed with Luteolin showed significantly decreased total colonic ACF formation, and also inhibition of foci containing four or more aberrant crypts when compared with cancer group. Biochemistry, experimental groups showed significant increase in Total protein, Albumin, Hb, WBC levels, when compared with cancer group. However, Luteolin showed significant decreased in LDH and urea when compared with Cancer group. Acute toxicity test, Luteolin did not show any signs of toxicity and mortality up to 200 mg/kg. Histopathology confirmed the result. AOM-treated group, ACF showed elongated crypts with loss of mucin and marked nuclear atypia. The proliferating nuclear cell antigens (PCNA) staining was much stronger in AOM-treated rats than in Luteolin-fed group. The colon sections from AOM-treated group showed high number of positive cells than those from Luteolin-fed group. Luteolin treated rats exhibited significant decreased Malondialdehyde (MDA) and increased superoxide dismutase (SOD) and catalase (CAT) in the colon tissue homogenate. In conclusion, the current study demonstrated that 5 or 20 mg/kg Luteolin showed significant reduction of ACF and this may be attributed to antioxidant effect and anti-proliferative effects of Luteolin.

Keywords: Luteolin, Chemoprotective, Azoxymethane, AOM, ACF.