Chemoprevention of colonic aberrant crypt foci by Gynura procumbens in rats

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Abstract

Ethnopharmacological relevance

Gynura procumbens is commonly used as a traditional medicinal plant in Malaysia for treatment of many diseases. To investigate the chemopreventive properties of Gynura procumbens on azoxymethane (AOM)-induced aberrant crypt foci (ACF) in rats.

Methods

Five groups of adult male rats were used in this experiment. Normal/control group; the rats were injected subcutaneously with 15 mg/kg of sterile normal saline once a week for two weeks, and orally administered with 10% Tween 20 (5 mL/kg). Carcinogen and treatment groups; the rats were injected subcutaneously each with 15 mg/kg body weight AOM once a week for 2 weeks and were continued to be fed for two months, respectively with 10% Tween 20, 500 and 250 mg/kg body weight plant extracts. Reference group; the rats were injected subcutaneously with 15 mg/kg body weight AOM once a week for 2 weeks, and injected intraperitoneally with fluorouraclid 35 mg/kg body weight for five consecutive days.

Result

Total ACF detected in methylene blue stained whole mounts of rat colon were 21, 23 and 130 in rats fed with 500, 250 mg/kg body weight treatment and carcinogen groups, respectively. Treatment with high and low doses of the plant extract led to 83.6% and 82.2% decrease in the total crypts in the groups fed 500 mg/kg and 250 mg/kg Gynura procumbens respectively compared to carcinogen group. Immunohistochemical staining of ACF showed suppressed azoxymethane induced colonic cell proliferation and Bcl-2 expression. Glutathione-S-transferase and superoxide dismutase activities were higher in treated rats compared to carcinogen groups.

Conclusion

Gynura procumbens reduced the incidence of AOM induced ACF. The findings showed that Gynura procumbens may have antiproliferative and antioxidative properties. Moreover, Gynura procumbens possesses the medicinal properties to prevent colon
Chemoprevention of colonic aberrant crypt foci by Gynura procumbens in rats cancer.

Graphical abstract

Keywords

Gynura procumbens; Azoxymethane; Aberrant crypt foci; Antioxidant activity; PCNA; Bcl-2

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