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Phytochemical Screening, Proximate Analysis, Lethality Studies and Anti-Tumor Potential of Annona muricata L. (Soursop) Fruit Extract in Rattus novergicus

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Abstract : Prostate tumor is fast becoming a leading cause of morbidity and mortality in human male adults, with 50 percent of men aged 50 years and above having histological evidence of the benign tumor. The study was set out to undertake phytochemical screening and proximate analysis of the pulp of A. muricata fruit - soursop; to determine the acute toxicity of the fruit pulp extract and its effect on male albino Wistar rats with concurrent induction of experimental benign prostate hyperplasia (BPH). Eighteen rats (average weight of 100g) were used for the lethality studies and were orally administered graded doses of aqueous extracts of the fruit pulp up to 5000 mg/kg body weight. Twenty five rats weighing 150-200g were divided into five groups of five rats each for the tumor studies. The groups included four controls – Hormone control, HC, which took Testosterone, T; and Estradiol, E2 – only, in olive oil as vehicle; Vehicle control, VC; Soursop control, SC, which received the extract only; VS, Vehicle and Soursop – and the Test group, TG (500mg/kg b.w.). All rats were dosed orally. Tumor was induced with exogenous Testosterone propionate: Estradiol valerate at 300µg: 80µg/kg b.w. (respectively) in olive oil, administered subcutaneously in the inguinal region of the rats on alternate days for 21 days. Administration of the fruit pulp at graded doses up to 5000mg/kg resulted in no lethality even after 72 hours. Results from tumor studies revealed that the administration of the fruit extracts significantly ($p < 0.05$) reduced the relative prostate weight of the TG compared with the HC, with values of 006±0.001 and 0.010±0.003 respectively. Treatment with vehicle, soursop and vehicle with soursop caused no significant ($p>0.05$) change in prostate size, with their respective relative prostate weights being 0.002±0.001, 0.004±0.002 and 0.002±0.001 compared with TG. Also, treatment with A. muricata fruit extract significantly decreased ($p < 0.05$) serum prostate specific antigen, PSA, in TG compared with HC, with values 0.055±0.017 and 0.194±0.068 ng/ml respectively. Furthermore, A. muricata administration displayed Testosterone boosting, Estradiol lowering and consequently testosterone-estradiol ratio increasing potential at the end of the 21 days. The preventive property of soursop against experimental BPH was corroborated by histological evidence in this study. The study concludes that A. muricata fruit holds a great potential for benign prostate tumor prevention and, possibly, management.

Keywords : annona muricata, benign prostate tumor, hormone, preventive potential, soursop
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