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Amelioration of Testosterone Induced Prostatic Injury by Diosmin

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Introduction: Prostate cancer is the leading cause of morbidity in US in men. Prostate cancer is regulated by androgens and the androgen receptor (AR) in early development. Androgens play important role in the growth of both normal and cancerous prostate cells by binding to and activating the androgen receptor. Hormonal therapy is used to suppress the level of androgens. Testosterone propionate is known to induce oxidative stress in rat prostate and also acts as tumor promoter in chemically induced prostate cancer in animal model. Diosmin is a flavone, exhibits anti-inflammatory, free-radical scavenging, anti-mutagenic, and anti-proliferative activities.

Methods: 30 Male Wistar rats were divided into five groups with six animals in each group. Group 1 rats were administered saline(vehicle) for six weeks orally, served as control. Group 2 rats were given intraperitoneal (i.p.) injection of Testosterone propionate (TP) for last six days (4 mg/kg), served as a toxicant. Diosmin was orally administered at two doses, 20 mg/kg and 40 mg/kg body weight to group 3 rats and group 4 rats, respectively for six weeks. Rats in groups 3 and 4 also received i.p. injection of TP for last six days. Group 5 received only 40 mg/kg of Diosmin for six weeks. After 24 hours of last dose, rats were sacrificed by CO_2 inhalation. Prostate gland was excised out for histology and various biochemical parameters.

Results: TP significantly augmented the levels of MDA (LPO) and uric acid (XO) formation; depleted glutathione and glutathione dependent enzymes significantly. However, diosmin reduced MDA and uric acid formation in dose dependent manner and replenished GSH and GSH dependent enzymes GPx, GR and GST significantly. Diosmin also restored histo-architecture of prostate in dose dependent manner compared to group 2.

Conclusion: Biochemical and histological findings in the present study revealed the protective role of diosmin against testosterone induced prostate injury in Wistar rats.

Keywords: Diosmin, Testosterone propionate, oxidative stress.