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Impact of *Epimedium grandiflorum's* phytochemical constituents on antioxidant potential and reproductive hormones in male albino rats

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Medicinal herbs and their preparations have been used by the mankind to treat a wide range of disorders since long. Current study was planned to explore the therapeutic potential of ethanolic extract of *Epimedium grandiflorum* leaves particularly to manage antioxidant and reproductive system disorders in albino male rats. Qualitative and Quantitative analysis explored a wide range of phytoconstituents, and the results of HPLC and FTIR spectroscopy revealed the presence of wide range of phenolic compounds and functional groups, respectively. It was also reported that ethanolic extract exhibited DPPH scavenging (78.87 ± 5.427 %) and H_2O_2 scavenging (31.82 ± 3.491 %), antioxidant and reducing power potentials. Further, extract not induced hemolysis (7.56 ± 1.297 %) while have significant clot dissolving (44 ± 5.2 %) potential. *In vivo* experimentation in albino male rats revealed that administration of plant extract orally for 42 days after intoxication with CCl_4 significantly ($P<0.05$) restore the selected blood parameters including liver enzymes, renal profiles, and stress markers. Moreover, administration of ethanolic extract significantly ($P<0.05$) restored reproductive hormones including testosterone, luteinizing hormone (LH), follicle stimulating hormone (FSH) and prolactin while significant ($P<0.05$) decreased levels of progesterone and estradiol toward a normal level in dose dependent manner. On histological examination of testicular tissue revealed significant ($P<0.05$) improvement in the structural architecture, especially in animals received ethanolic extract in high dose (200 mg/Kg b.w.) as compared to both positive control groups. It could be concluded that *E. grandiflorum* medicinal plant has significant antioxidant and reproductive hormones restoring capacity. However, more research is required to isolate the novel compounds from this therapeutic plant to address the healthcare problems particularly impotency.

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