



Ameliorating effect of ginseng on epididymo-orchitis inducing alterations in sperm quality and spermatogenic cells apoptosis in rats

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Objective

Epididymo-orchitis (EO) potentially results in reduced fertility in up to 60% of affected patients. The anti-inflammatory effects of Korean red ginseng (KRG) and its ability to act as an immunoenhancer in parallel with the beneficial effects of this ancient herbal medicine on the reproductive systems of animals and humans led us to evaluate its protective effects against acute EO.

Methods

This animal experimental study was conducted in the Department of Anatomical Sciences, Faculty of Medicine, Zanjan University of Medical Sciences (ZUMS), Zanjan, Iran during 2013-2015. We divided 50 Wistar rats into five following groups (n=10 per group): i. Control-intact animals, ii. Vehicle-phosphate buffered saline (PBS) injection into the vas deferens, iii. KRG-an intraperitoneal (IP) injection of KRG, iv. EO-an injection of uropathogenic Escherichia coli (UPEC) strain M39 into the vas deferens, and v. EO/ KRG-injections of both UPEC strain M39 and KRG. The treatment lasted seven days. At the end of treatment we evaluated sperm parameters, number of germ cell layers, Johnson's criteria, germ cell apoptosis, body weight and relative sex organs weight.

Results

Acute EO increased the relative weight of prostate and seminal vesicles ($P \leq 0.05$) and reduced sperm quality parameters such as total motility, sperm concentration ($P \leq 0.01$), and the percentage of normal sperm ($P \leq 0.001$). Moreover, acute EO decreased Miller's ($P \leq 0.05$) and Johnsen's scores and increased apoptotic indexes of spermatogenic cells ($P \leq 0.001$). KRG treatment decreased prostate weight gain ($P \leq 0.05$) and improved the percentage of sperm with normal morphology, total motility ($P \leq 0.01$), and progressive motility ($P \leq 0.05$). The apoptotic indexes of spermatogenic cells reduced ($P \leq 0.001$), whereas both Johnsen's ($P \leq 0.01$) and Miller's criteria increased in the KRG-treated EO testis ($P \leq 0.05$).

Conclusion

Injections of KRG showed to have an ameliorating impact on the devastating effect of EO on fertility in rats.