

Effects of Spironolactone on Pituitary-Gonadal Axis Hormones in Adult Female Rats

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Abstract

Introduction: Spironolactone is a diuretic drug with aldosterone-antagonistic properties, used in the treatment of hypertension, congestive heart failure, cirrhosis, kidney disorders, and hirsutism. Some studies have reported decreased libido and menstrual disorders as the side-effects of this medication. The present study was done to investigate the effects of spironolactone on pituitary-gonadal axis hormones.

Materials and Methods: Five groups of rats, each including nine adult females and with an average weight of 180 – 200gr, were selected. The control group received no drugs, while the sham group received spironolactone solvent (Normal saline), and the three experimental groups were put on oral spironolactone 25, 50 and 100mg/kg of the total body weight for 14 days. Hormonal measurements, including luteinizing hormone (LH), follicle stimulating hormone (FSH) and progesterone were performed by radioimmunoassay (RIA) after the test interval.

Results: The mean values for FSH (*mIU/ml*) were 0.11±0.01, 0.14±0.02, 0.38±0.06, 0.16±0.02 and 0.18±0.03 for the three experimental (at 25, 50 and 100mg/kg doses of spironolactone), sham and the control groups, respectively with significant increase in the third experimental group in comparison to the controls. LH concentrations (*mIU/ml*) were 0.13±0.01, 0.19±0.02, 0.14±0.02, 0.13±0.02 and 0.12±0.02 respectively with significant increases at 50mg/kg spironolactone intake. Estrogen concentrations (*pg/ml*) were 99.9±21.03, 143.7±22.5, 139.1±32.01, 131.9±32.04 and 125.2±46.37, whilst progesterone concentrations (*pMol/ml*) were 100.2±24.9, 72.6±15.09, 79.4±19.7, 62.1±26.02 and 66.5±27.6 respectively with no significant changes in the experimental, sham or the control groups.

Conclusion: Spironolactone had significant and dose-dependent effects on LH and FSH hormones. However, the medication neither had any negative effects on the concentration or production of sex steroids nor on the function of the gonads. Therefore, its intake does not interfere with hormonal and subsequently gonadal functions.

Key Words: Female fertility, Gonadal axis, Gonadotropin, Pituitary, Sex hormone, Sex steroid, Sexual function, Spironolactone.

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