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Poster Presentation

Investigation the Effect of EMF on Plasma Levels of Corticosterone, Testosterone and Testicular Gene Expression of Gstt1 of Male Rats

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Abstract

The chronic exposure to ELF-EMF (extremely-low frequency electromagnetic field) has been shown as an effective factor at biological systems. In order to determine the possible effects of whole-body exposure to EMF on plasma levels of testosterones and corticosterone, weight gain and testicular gene expression of Gstt1 of male rats, the present study was performed by the following procedure: thirty five adult male rats of weight 200-250g were divided into 4 groups: group 1, experimental group were included 7 rats which exposed to 50Hz and 500μT in solenoid for 1 month, group 2, experimental group that were included 14 rats which exposed to 50Hz and 100μT in solenoid for 1 month, group 3, sham operated group were included 7 rats which kept in same condition as the group 1 except in off solenoid, group 4, control group were included 7 rats that kept in normal condition of animal room. After one month, each rat was anaesthetized by i.p injection of 30mg/kg of sodium pentobarbital. Plasma concentration of corticosterone and testosterone was measured by using ELISA and RIA methods respectively. Testicular gene expression of Gstt1 was determined by using RT-PCR. The results showed a significant increase of the plasma levels of testosterone and corticosterone. Testicular gene expression of Gstt1 was not different between groups. It can be concluded that chronic exposure to EMF induces steroidogenesis that is independent of testicular gene expression of Gstt1. Another possible effect might be downregulation of corticosterone receptors on leydig cells and subsequent increase of testosterone release from leydig cells. Therefore, EMF as an environmental stressor may lead to hormonal and gene expression alterations.

Keywords: Rats, Biological systems, Gstt1

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