

Paradoxical sleep deprivation decreases serum testosterone and Leydig cells in male rats

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Abstract	<p>BACKGROUND Chronic stress increases glucocorticoid levels and accelerates reduction in Leydig cells functions and numbers. Chronic stress models in the working place comprise sleep deprivation, sedentary stress, and physical stress. The aim of this study was to evaluate the effect of various work stress models, such as stress from paradoxical sleep deprivation (PSD), immobilization, and footshock, on serum testosterone levels and number of Leydig cells in male albino rats. METHODS This study was of experimental randomized post-test only with control group design using 24 male Wistar albino rats (<i>Rattus norvegicus</i>). The sample was divided into 4 groups: K1 (control), K2 (PSD), K3 (immobilization) and K4 (footshock), receiving treatment for 25 days. Measured parameters were serum testosterone level and Leydig cell number. Analysis of variance (ANOVA) was used for statistical analysis, followed by post hoc LSD. RESULTS Mean serum testosterone levels (0.07 ± 0.08 ng/ml) and Leydig cell numbers (4.22 ± 10.96) were lowest in the PSD stress model. Serum testosterone levels differed significantly between controls and PSD group ($p=0.014$), while there was a significant difference in numbers of Leydig cells between footshock stress and PSD ($p=0.011$) and between the three stress groups and controls ($p=0.006$). CONCLUSION This study demonstrated that PSD, immobilization and footshock stress significantly decreased serum testosterone levels and number of Leydig cells in male albino rats (<i>Rattus norvegicus</i>). The mechanism by which PSD affects serum testosterone is still unclear.</p>
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