Original Paper

Effect of nicotine, Ritalin and combined usage of nicotine and Ritalin on daily sperm production and epididymal sperm reserve in BALB/c mice

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Abstract

Background and Objective: Nicotine is an addictive substance and Ritalin is a medicine which has been prescribed for treatment of hyperactivity / attention deficit disorder (ADHD). This study was done to evaluate the effect of Ritalin and nicotine and combination of Ritalin and nicotine on daily sperm production and epididymal sperm reserve in mice.

Methods: In this experimental study, 120 adult male BALB/c mice were randomly allocated into one control group and 11 experimental (treatment) groups. Animals, in the first, second and third treated groups were received nicotine at the doses of 100, 200 and 400 microgr/kg/bw, respectively. Mice in fourth and fifth treated groups were received Ritalin at doses of 2 and 10 mg/kg/bw, respectively. Animals in sixth and seventh treatment groups were received nicotine in 400 microgr/kg/bw and Ritalin in 2 and 10 mg/kg/bw and in eighth and ninth groups, nicotine at dose of 200 microgr/kg/bw and Ritalin at doses of 2 and 10 mg/kg/bw, respectively. Animals in tenth and eleventh treated groups were received nicotine as dose of 100 microgr/kg/bw and Ritalin at doses of 2 and 10 mg/kg/bw, respectively. Ritalin and nicotine were administrated orally for 40 days. At the end of study, daily sperm production and epididymal sperm reserve were measeared.

Results: The daily sperm production was significantly reduced in the groups with high consumption doses of nicotine and different doses of Ritalin and the majority of groups which used the combination of Ritalin and nicotine ($P<0.05$). The epididiymal sperm reserve was significantly increased in experimental groups of 8, 9, 10 and 11 which were received the combination of Ritalin and nicotine in different doses ($P<0.05$).

Conclusion: The combination of Ritalin and nicotine reduces daily sperm production and it incereases epididiymal sperm reserve in adult BALB/c mice.

Keywords: Daily sperm production, Epididymal sperm reserve, Ritalin, Nicotine, Mouse

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