

Effects of Nicotine and Ethanol Administration on the Seminal Vesicle of Adult Rats

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Abstract

Background: The effects of cigarette and alcohol on male reproductive system have been studied mainly on the testis and prostate but studies on their co-administration on the seminal vesicle which produces about 70% of the semen volume are scarce. Therefore, the present study evaluated the effects of nicotine and/ or alcohol on the glandular epithelial cells of seminal vesicle in adult rats.

Methods: In this study, 50 adult Wistar rats, aged 9 weeks, were randomly divided into five groups, including: sham, control (0.09% normal saline), 20% ethanol (2 ml/kg), nicotine (0.1 mg/kg) and ethanol-nicotine. Ethanol was given via oral gavage but nicotine was administered subcutaneously for 50 days. Blood samples were collected prior to intracardiac perfusion. The seminal vesicles were later dissected and tissue samples were stained by H&E for morphologic and morphometric studies. One-way ANOVA and Tukey's post-hoc test were used for data analysis. A p-value <0.05 was considered statistically significant.

Results: The height of glandular epithelial cells of the seminal vesicle was reduced remarkably in rats in ethanol versus the control group ($p < 0.0001$). However, testosterone concentrations were not significantly different in the two groups. Semen volume, as well as its acidophilic properties in the lumen of most acini were lower in the ethanol comparative to the control group.

Conclusion: Ethanol had the most negative effects on the cells and tissue structure of seminal vesicle compared to nicotine. The minimal effects seen by the simultaneous use of alcohol and nicotine on seminal vesicle structure might be attributed to the reduction of alcohol absorption following nicotine administration.

Keywords: Cigarette, Ethanol, Nicotine, Seminal vesicle, Testosterone.

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