



Short communication

Interaction between tobacco smoke and alcohol in animal models

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Abstract:

This study aimed to evaluate the impact of nicotine and other xenobiotics contained in tobacco smoke on the pharmacokinetics of ethyl alcohol and on the levels of toxic ethanol metabolites such as acetic aldehyde. We also sought to evaluate the impact of a one-time administration of ethyl alcohol on the biotransformation of nicotine, the addictive alkaloid of tobacco smoke, to its main metabolite, cotinine.

Rats were divided in three groups. The first group was exposed to tobacco smoke (6 h per day, for 5 days), the second group was treated with alcohol (2 g/kg), and the third group was exposed to tobacco smoke and treated with alcohol.

Earlier exposure to tobacco smoke had an insignificant impact on the elimination of alcohol, but caused a significant increase in the volume of distribution, which could be caused by an increase in the first-pass effect. In contrast, inhaling tobacco smoke decreased acetic aldehyde concentrations in the first hour after alcohol administration. The major finding of this study was that a single dose of ethyl alcohol increases the rate of elimination of cotinine, the major metabolite of nicotine. This was demonstrated by a reduced biological half-life ($t_{0.5}$) and mean resident time (MRT).

Key words:

tobacco smoke, ethyl alcohol, pharmacokinetics, interaction
