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The influence of caffeine on ethyl glucuronide levels in rat serum and in rat hair.

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Abstract

Background

Ethanol and caffeine are the most widely used psychoactive substances in the world, with an observed steady increase in the combined consumption of alcohol and caffeine. Specific signs of ethanol-caffeine interactions have been reported both in humans and in animals. The metabolic effects of these interactions have not been fully elucidated. There are no published reports on the influence of caffeine on ethyl glucuronide (EtG) formation. EtG is a direct metabolite of ethanol and is very often used as a biomarker of alcohol consumption. Here, we investigated the influence of caffeine on the formation of EtG in rat plasma and EtG incorporation into the hair.

Methods

Studies were conducted on three male Wistar rat groups, each receiving either ethanol at 3 g/kg/day, ethanol (at the same dose) with caffeine at 3 mg/kg/day, or caffeine at 3 mg/kg/day for four weeks. EtG and caffeine levels were evaluated in hair and in blood after the last administration.

Results

Blood EtG levels after the administration of ethanol together with caffeine were significantly higher than after the administration of ethanol alone. EtG levels in rat hair in the ethanol-and-caffeine group were also higher than in the ethanol-only group, but the difference was not statistically significant.

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