The Effect of Magnesium on Alcohol Intake and Locomotor Sensitization

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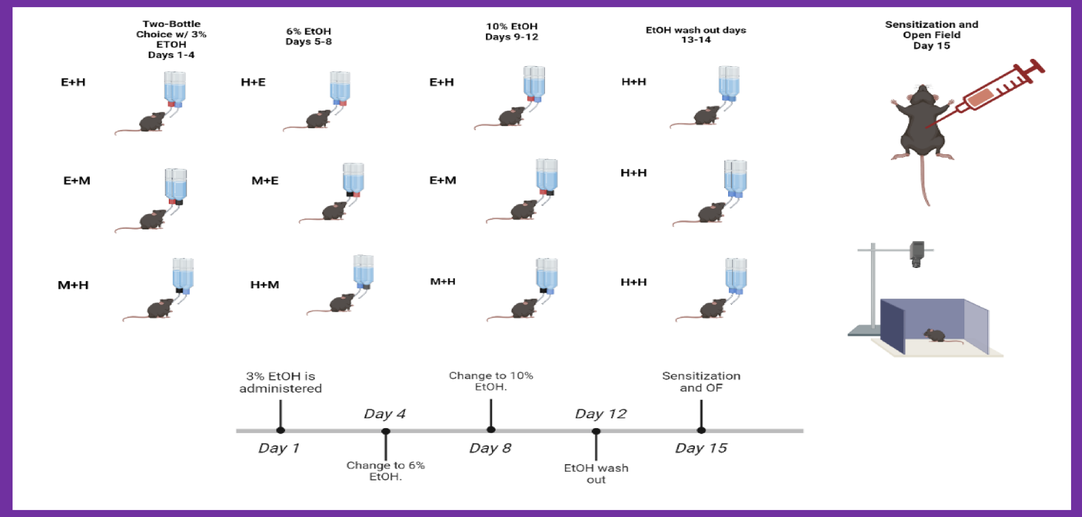
Introduction

Alcohol use disorder poses a significant societal burden, necessitating research efforts to mitigate its impact on mortality rates. While existing studies have explored magnesium's effects on alcohol addiction during later stages, limited attention has been given to its potential benefits at earlier phases of alcohol use disorder.

Aim

This study aimed to investigate whether oral magnesium supplementation could influence alcohol intake in 18 C57BL/6J mice randomly assigned into one of three groups: EH (n=6), EM (n=6), or MH (n=6).

Methodology



Conclusion

- Magnesium increased 3% ethanol intake.
- There was no difference in locomotor sensitization between the groups.
- Further research is required to establish the most effective magnesium dosages, ideal timing of administration, and underlying mechanisms.
- These findings are a valuable contribution to understanding magnesium's potential as a preventive and therapeutic option for alcohol dependence and withdrawal.

Results

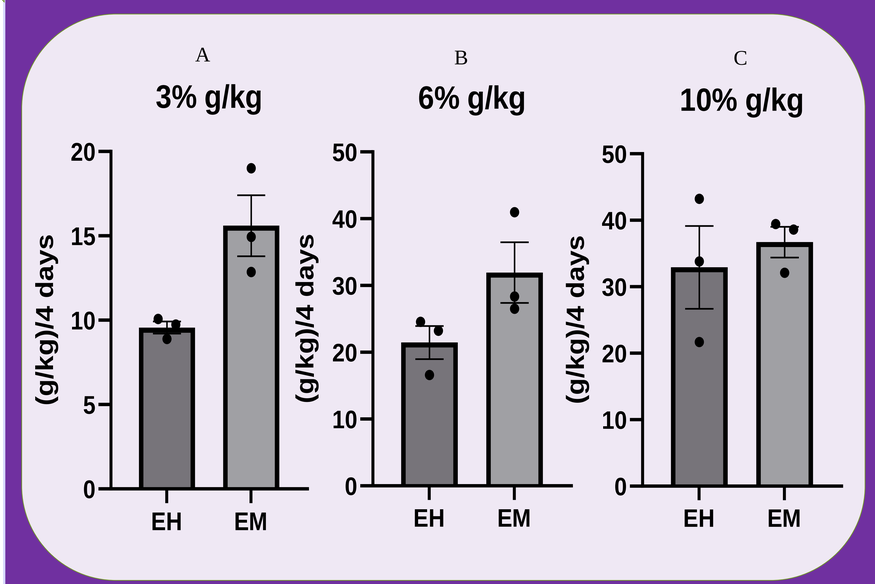


Figure 2. **g/kg of Ethanol consumed over 4 days by two treatment groups (EM, EH).** The mice had 24h access to different ethanol concentrations over 4 days and the volume of ethanol drank by the EH and EM treatment groups was recorded daily. Each bar represents the mean g/kg of ethanol consumed over 4 days within the treatment group, and each dot represents an individual cage. Error bars indicate the standard error of the mean (SEM). **(A)** The mice had access to 3% ethanol. The statistical analysis indicated a significant difference between the two groups, t(4) = 3.279, p= .0305. **(B)** The mice had access to 6% ethanol. The statistical analysis indicated no significant difference between the two groups, t(4) = 2.026, p= .1127. **(C)** The mice had access to 10% ethanol. The statistical analysis indicated no significant difference between the two groups, t(4) = 0.5702, p= .5991.

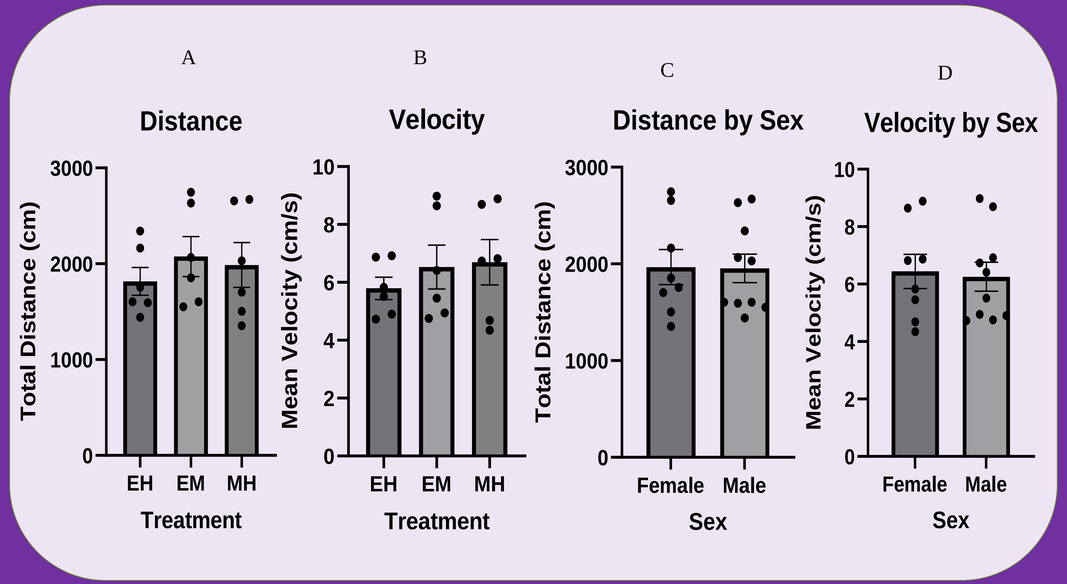


Figure 3. **Sensitization data across treatment groups (A&B) and Sex (C&D).** The mice were given a challenge dose of 2 g/kg of ethanol i.p. and placed in an open field arena for 5 min. Each bar represents the mean distance in A&C and the mean velocity in B&D. Error bars indicate the standard error of the mean (SEM), and each dot represents an individual data point. **(A)** Total distance traveled in a sensitization assay by the three treatments (EH, EM, MH). There was no significant difference between the treatments, F (2, 15) = 0.4361, P=0.6545. **(B)** Mean velocity (cm/s) of the three treatments. There was no significant difference between the treatments, F (2, 15) = 0.5171, P=0.6065. **(C)** Total distance covered by female and male mice. There was no significant difference between the two groups, t(16) = 0.05967, p = 0.9532. **(D)** Mean velocity (cm/s) by sex. There was no significant difference between the two groups, t(16)= 0.2381, p= 0.8148.

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