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The Effect of Alcohol on Total Antioxidant Activity and Nitric Oxide Levels in the Sera and Brains of Rats

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Abstract: Background: The present study investigated the effect of alcohol consumption on total antioxidant activity (AOA) and nitric oxide (NO) levels in the sera and brains of rats. Materials and methods: The study included 24 rats that were divided into 2 groups: the control group (n = 12) and the alcohol group (n = 12). Both groups were fed regular laboratory chow and tap water for a period of 2 months; however, the alcohol group received 15% (v/v) ethanol in their drinking water. Then, the rats were decapitated, and serum and brain AOA and NO levels were measured. Results: Both serum and brain AOA of the alcohol group were significantly lower than those of the control group. Serum NO levels of the alcohol group were significantly higher, whereas brain NO levels were lower, but not significantly, than those of the control group. Conclusion: Our findings show that alcohol diminished both serum and brain defense mechanisms against free radical attack, which might result in many diseases. Moreover, decreased AOA levels in the alcohol group might be a significant cause of increased serum NO levels in this group or vice versa: however, the effects of alcohol on brain NO levels require further investigation.

Key Words: Alcohol, serum, brain, total antioxidant activity, nitric oxide

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