Alcohol-non-preferring Sardinian rats exhibit a higher ethanol-induced taurine increase compared to alcohol-preferring Sardinian rats: a microdialysis study

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It is well known that ethanol injections induce increases in the extracellular taurine concentration from various rat brain regions. Furthermore, recent studies have shown that taurine supplementation modulates the ethanol reinforcing effects in a place conditioning experiment. However, it is unknown whether there is a relationship between this taurine increase and the ethanol drinking behaviors. In the present microdialysis experiments, we compared the effects of ethanol injections (1.0 and 2.0 g/kg) on the extracellular taurine concentration from the nucleus accumbens of either Sardinian alcohol-preferring or Sardinian alcohol-non-preferring rats which have been selectively bred for their differential ethanol preference. The results show that acute ethanol produces an immediate increase in the taurine microdialysate content from both rat lines. However, this increase in taurine microdialysate content was more potent in the alcohol-non-preferring rats. Since taurine has been postulated to be released by brain cells to modulate some of the adverse effects of ethanol, the higher increase in taurine microdialysate content in the alcohol-non-preferring rats is probably related to their higher vulnerability to ethanol aversive effects.