HIGH ETHANOL AND ACETALDEHYDE STIMULATE STRIATAL DOPAMINE IN ALDH2-KNOCK MICE: A REVERSE MICRODIALYSIS STUDY

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The present study was designed to examine the local effects of ethanol (EtOH) and acetaldehyde (AcH) on striatal dopamine (DA) and serotonin (5-HT) release in wild type (WT) and Aldh2-knockout (Aldh2-KO) mice in vivo. Mice were perfused with saline or three different concentrations of EtOH (100, 200 or 500 mM) into the striatum. Dialysate samples were collected every 5 min for 60 min and then analyzed by HPLC coupled to ECD. We show that local perfusion of 200 and 500 mM EtOH but not 100 mM through the microdialysis probe markedly increased the extracellular levels of DA in the striatum of Aldh2-KO mice, indicating an AcH effect. In WT mice, only the 500 mM concentration of EtOH increased the extracellular levels of DA. EtOH failed to change the levels of 5-HT in the dialysates at any dose. Our results indicate that high EtOH and AcH administered centrally can cause an increase DA levels in the mouse striatum suggesting the possibility that this EtOH- or AcH-induced DA elevation in the striatum could play a role in behavioral stimulation of EtOH.