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Inhibitory Effects of Ethanol in the Neonatal Rat Hippocampus In Vivo

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Abstract

© 2016, Springer Science+Business Media New York. Ethanol-induced neuroapoptosis in the developing brain has been suggested to involve suppression of neuronal activity. However, ethanol acts as a potent stimulant of neuronal activity by increasing the frequency of depolarizing GABA dependent giant depolarizing potentials in the neonatal rat hippocampal slices in vitro. Here, we show that ethanol strongly inhibits, in a dose-dependent manner (1–6 g/kg), sharp waves and multiple unit activity in the hippocampus of neonatal (postnatal days P4–6) rats in vivo. Thus, the effects of ethanol on the developing hippocampal network activity cardinaly differ in vitro (stimulation) and in vivo (inhibition).

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Keywords

Electroencephalography, Ethanol, Hippocampus, Neonate, Rat, Sharp waves

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