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PHARMACOLOGICAL AND TOXICOLOGICAL EFFECTS OF ETHANOL LOW DOSES

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Several effects, including behavioral effects of ethanol are explained on the basis of its peculiar bimodal dose-related activity. This study was aimed at evaluating comparatively the effects of a low dose (1% v/v) and a great dose (10% v/v) of ethanol on the learning and memory processes of the rat. Two procedures (chronic and subchronic) were applied in order to take into account the possible induction of tolerance. The following tests were used: shuttle-box, open field, spontaneous motility test and narcosis test. Animals exposed to an ethanol low dose showed a stimulation of locomotor activity in the open field test and an increase of some learning and memory parameters in the shuttle-box test. Furthermore, in the narcosis test, an increased latency and a reduced duration of sleep was found in animals given the selective antagonist of the dopamine D2 receptors, sulpiride, compared to those treated with a great dose of ethanol and to control rats. These results suggest that dopamine D2 receptors are involved in the inhibition exerted by a low dose of ethanol on the narcosis parameters. These results may be explained by the interaction of ethanol with central receptors in relation to the dose of the drug that is administered. The duration of treatment is important to the induction of down-regulation of dopamine D2 presynaptic receptors.

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