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EFFECTS OF CHOLINERGIC SYSTEM OF DORSAL HIPPOCAMPUS OF RATS IN THE MK801-INDUCED ANXIOLYTIC-LIKE BEHAVIOR

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Introduction: Some investigations showed that the glutamate receptors have critical role for cognition such as learning and anxiety in the brain.

Objectives: The possible involvement of cholinergic system of dorsal hippocampus in the anxiolytic-like response induced by NMDA receptor antagonist, MK801 has been investigated in the present study.

Methods: The male wistar rats were used and the elevated plus maze apparatus has been used to test parameters (%OAT, %OAE, locomotor activity, grooming, rearing and defecation) of anxiety-like behaviors.

Results: The data indicated that intra-CA1 administration of MK801 (2µg/rat) increased %OAT and %OAE but did not other exploratory behaviors, indicating an anxiolytic-like response. Moreover, intra-hippocampal injection of cholinergic receptor antagonists, mecamylamine ( 2 µg/rat) and scopolamine (4 µg/rat) by themselves, 5 min before testing increased %OAT and %OAE, but did not alter locomotor activity and other exploratory behaviors, suggesting anxiolytic-like behavior. On the other hand, intra-CA1 co-administration of ineffective doses of scopolamine (3 µg/rat), but not mecamylamine (1 µg/rat) with ineffective dose of MK801 (1 µg/rat) increased %OAT and %OAE.

Conclusion: The data may indicate that the possible involvement of cholinergic system of CA1 on anxiolytic-like response induced by MK801.