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ROLE OF CHOLINERGIC SYSTEM ON THE CONSTRUCTION OF MEMORY AND ITS INTERACTION WITH DOPAMINERGIC SYSTEM

F. Z. Zangeneh, F. Motammedi A. Bakhtiarian



Abstract:

The central cholinergic system has been associated with cognitive function and memory and acetylcholine plays an important role during the early stages of memory consolidation. In this study, after training mice were tested with one way active avoidance procedure and retention were tested at 4, 8, 12, 16 and 24 hours of training and compared with non-shocked mice, in which it took 24 hours, a suitable time for retention test. Low dose administration of arecoline and physostigmine pre-training, immediate post-training and before retrieval showed that muscarinic agonist arecoline can potentiated memory in post trained and retrieval phases and reversible cholinesterase inhibitor physostigmine potentiated memory only in retrieval phase. Scopolamine disrupted acetylcholine potentiation only in retrieval phase. In the second part of this study, the effect of dopaminergic system was investigated. Low dose of apomorphine and D2 agonist bromocriptine potentiated memory when administered immediately post-training, and D2 antagonist sulpiride impaired memory. When the cholinergic system was blocked by scopolamine immediately post-training, apomorphine and bromocriptine potentiated memory and sulpiride impaired it. In conclusion, these results suggest that, cholinergic system in retrieval phase is very critical and there was no interaction between the two systems in the post-training phase.

Keywords:

Muscarinic receptor , consolidation , retrieval , active-avoidance , sulpiride

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