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Poster Presentation

Efeect of Morphine State-Dependent Memory on Pentylenetetrazole in the Rat

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Abstract

It has been shown that pre-test systemic administration of morphine was able to reverse memory impairment induced by pre- or post-training morphine in an inhibitory avoidance paradigm. Since the recall of the learned information is possible only if the subject is in the same state as during the encoding phase, this kind of learning is known as state-dependent learning. Several drugs have been demonstrated to replace the pre-testing effect of morphine on the restoration of memory. Pentylenetetrazole (PTZ) has been shown to affect many processes involved with central nervous system functions including memory. Considering the above variables, PTZ has been reported to impair or to enhance memory Several hypotheses have been proposed to explain the acute effects of PTZ on memory in the laboratory animals. Morphine (2.5, 5 and 7 mg/kg, i.p.) was administered as pre-/post-training and 24 h later as pre-test drug, and the latencies (Sec.) were measured for rats. PTZ (60 mg/kg, i.p.) was administered before the pre-test morphine. The step-through inhibitory apparatus in two train and test sessions were used for memory assessment. One-way ANOVA was used for studying the difference between the groups in step-through experiments. Post-training i.p. injection of morphine (2.5–5 and 7 mg/kg) dose dependently reduced the step-through latency, showing morphine-induced amnesia. Amnesia induced by post-training morphine was reversed by pre-test administration of morphine (2.5, 5 and 7 mg/kg, i.p.) and induced morphine-state-dependent learning. Pre-test injection of PTZ (60 mg/kg) by itself significantly impaired the memory retrieval ($P<0.001$). However, pre-test administration of PTZ potentiated morphine state-dependent learning ($P<0.001$). The results indicate that PTZ mechanism participate in the facilitation of morphine-induced recovery of memory, on the test day.

Keywords: State Dependency, Learning & Memory, Morphine, PTZ

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