Summary

Drugs, hormones and neurotransmitters have a dose dependent relationship with retention performance. It is usually assumed that they act at specific receptors sites consisting of large molecules and located on the external surfaces of the cells in the target organ.

Recent investigations (McGaugh, 1978; 1979; Izquierdo, 1979; 1981) indicate a possible role of endogeneous opiate systems which contain enkephalin a neurotransmitter, in modulation of memory storage. Indirect support for the role of this system in memory storage is available from studies in which morphine an opiate agonist and naloxone - an antagonist were found to mediate retention.

In view of the immense importance of this system in memory, the following two hypothesis were formulated:

1. Since morphine is an opiate receptor agonist, its immediate post training administration would lead to retention impairment in a dose dependent manner.

2. Since very low and high doses of morphine enhance retention, an inverted U-shaped relationship would be obtained between varying doses of morphine and retention.
For testing these hypotheses a multigroup design with 7 groups was used.

A sample of 60 albino rats, approximately 3 months old weighing 130 ± 5 gms was drawn on a random basis from the rat population of the animal house of the Department of Psychology, M.D. University, Rohtak.

The animals were given a simple training trial in a passive avoidance task. Immediately after training, the animals were injected with 1 mg, 3 mg, 10 mg, 20 mg, 25 mg, 30 mg/kg. Morphine or .25 ml of NaCl, depending upon the group to which they belonged.

Retention tests were given after 1, 2, 7 and 14 days.

Duncan's range test was employed to test the significance of difference between the mean latency scores of the various groups.

Results do not support the first hypothesis. The predicted facilitatory effect of Morphine, with extreme doses, was not observed. However, an inverted U-shaped relationship was observed between dose level and retention performance, thus confirming the second hypothesis.

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