

EFFECTS OF DIZOCILPINE, CHLORDIAZEPOXIDE, AND SCOPOLAMINE
ALONE AND IN COMBINATION ON A MULTIPLE-COMPONENT,
REPEATED-ACQUISITION TEST OF SPATIAL LEARNING

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ABSTRACT

The present study investigated the effects of the NMDA receptor antagonist, dizocilpine, the GABA agonist, chlordiazepoxide, and ACh antagonist, scopolamine, given alone and in dizocilpine-chlordiazepoxide and scopolamine-chlordiazepoxide combinations, using a within-subject, repeated-acquisition and performance procedure adapted to the Morris Swim Task. The procedure involved teaching subjects to swim to a hidden platform that remained in the same location of the swimming pool in the presence of one set of extra-pool cues (performance component) and in a new location each day in a presence of a second set of extra-pool cues (acquisition component). Escape latencies, swim path ratio, and swim speed of each individual subject were analyzed to assess the effects of drugs. NMDAR and ACh antagonists failed to selectively disrupt acquisition patterns. GABA agonist produced selective impairment of acquisition at doses that did not affect performance in three out of four subjects. Furthermore, low doses of chlordiazepoxide when given together with dizocilpine (0.1 mg/kg) blocked the detrimental effects typically caused by that dizocilpine dose. When administered together, 0.3-3.0, 0.3-5.6, and 1.0-3.0 mg/kg of scopolamine and chlordiazepoxide selectively disrupted acquisition patterns. In contrast, when administered together, the 1.0 mg/kg scopolamine dose and 5.6 mg/kg CDZ dose caused behavioral impairments in the performance component.

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