

ADRENERGIC MODULATION OF THE RAT'S AVOIDANCE RESPONSE IN THE ELEVATED PLUS MAZE

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ABSTRACT: The elevated plus maze (EPM) is an animal model of anxiety based on the spontaneous behavior of the rat in a single 5 min trial. However, when re-evaluating rats on a Trial 2 session (24 h after), in the EPM, a previous learned experience from Trial 1 will increase the avoidance response (AR). To test the hypothesis that the experience in the EPM Trial 1 would be mediated by the activation of β -adrenergic receptors, two experiments were conducted. In Experiment 1, Wistar rats were injected (IP) with propranolol (PROP; 5, 10 or 20 mg/kg) prior to Trial 1 and were retested (Trial 2) undrugged in the EPM. PROP-treated rats showed an increased open arm entries (OAE) and time (OAT), suggesting an anxiolytic-like (anti-aversive) effect in Trial 1. In Trial 2 the rats from PROP group, performed equal to experimental naïve control rats, suggesting a blockade of the AR elicited by PROP. In Experiment 2, naïve rats were injected with PROP 20 mg/kg prior to Trial 1. Trial 2 they were treated (IP) with either saline or midazolam (MDZ; 0,25 mg/kg) thirty minutes before submission into the EPM. In trial 2, MDZ-treated rats showed a reliable anxiolytic-like effect shown by an increased OAE and OAT, when compared to saline-treated rats. Therefore, PROP reinstated the anxiolytic properties of the MDZ, known to be blocked in saline-treated subjects. The above results suggest that the PROP blockade of ascending stress-related information, in Trial 1 impairs the rat to acquire and retain the AR characteristic of the EPM task. Supported by: NIH and Fogarty International, Minority International Research Training Program (TW 00123-S2).