

Reinforcing Effects of Caffeine

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The experiments carried out by this group, on experimentally naive mice, were designed to determine if caffeine possesses reinforcing effects with the aid of a one-session initiation of intravenous drug self-administration method. Their data suggest a reinforcing action of caffeine and show the utility of one session self-administration for the study of reinforcing properties of drugs with unstable addictive potential. The reinforcing action of caffeine appears to be mediated by calcium channels agonists and antagonists and by adenosine A1 receptors.

A further study employed place conditioning technique to compare the rewarding potential of caffeine with that of cocaine, the classical narcotic euphoriant, and ethanol, widely abused non-narcotic substance with equivocal rewarding potential in animal experiments. Data showed that attractiveness of cocaine-paired cues was 100% higher than those for caffeine, whereas reinforcing actions of caffeine and ethanol seemed to be equal. Moreover, low doses of caffeine (3 mg/kg) are able to prevent the extinction of the cocaine seeking pattern of the mice while high doses of either caffeine (30 mg/kg) or cocaine (20 mg/kg) are ineffective. The effects of caffeine on cocaine-seeking behaviour might be due to the interaction with adenosine A1 but not A2a receptors.