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Involvement of female sex hormones in the cannabinoid-induced catalepsy and analgesia in ovarectomized mice

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Background

Cannabinoids are psychoactive compounds with many pharmacological properties such as analgesia, sedation and catalepsy most which are mediated by CB1 receptors. In the present study, we evaluated whether the ovarian sex hormones are involved in the cannabinoid-induced catalepsy and analgesia in ovarectomized (OVX) female mice.

Materials and methods

Female swiss mice (weighing 25-30 g) were divided into 3 main groups: unoperated, sham-operated and OVX. Both the catalepsy and analgesia induced by different doses of synthetic cannabinoid WIN 55,212-2 (2 and 4 mg/kg, i.p.) were examined in three groups in the presence or absence of the CB1 antagonist AM251. We also evaluated effects of estradiol and progesterone on catalepsy and analgesia induced by WIN 55,212-2 in OVX group.

Results

WIN 55,212-2 caused ($P<0.001$) catalepsy and analgesia in three groups in a dose-dependent manner which was inhibited by AM251 ($P<0.001$). Pretreatment with estradiol caused no effect on cannabinoid-induced catalepsy or analgesia in OVX group. However, progesterone exerted a strong enhancing effect ($P<0.05$) on catalepsy or analgesia induced by low dose WIN 55,212-2 in OVX mice.

Conclusions

The present data demonstrated for the first time that ovarian female hormone progesterone is involved in both cannabinoid-induced catalepsy and analgesia in female mice.

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