Indian Journal of Experimental Biology
Vol. 63, January 2025, pp. 25-38
DOI: 10.56042/ijeb.v63i01.9155

Orexinergic and cannabinoid CB1 receptors interaction on genetic absence epilepsy in WAG/Rij rats

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Received 28 February 2024; revised 15 May 2024

The goal of this study is to clarified the effect of orexinergic system and interaction between orexinergic and cannabinoid systems in WAG/Rij rats. WAG/Rij rats were used to electrocorticogram recordings. 0.6 µg hemopressin, 7.5 µg arachidonyl-2′-chloroethylamide hydrate (ACEA), 0.50 µg AM-251 and also 4, 8, 16 µg doses of OX-A, 6 and 12 µg doses of SB334867 applied and effective doses were determined. After three hours of baseline recording in rats, the effective doses of the substance were applied by intracerebroventricularly, and recording continued for three more hours. Interaction groups were also subjected to the same procedure. Records were analyzed in terms of seizure duration and number, spike number and amplitude. 8 µg OX-A and 12 µg SB334867 significantly decreased the duration and number of seizures, spike number, excluding amplitude (P<0.05). While hemopressin and ACEA decreased absence seizure activity, AM-251 increased it. When application of OX-A+hemopressin, spike wave discharges (SWDs) activity reduced and it was determined that OX-A showed an activity similar to its own effect. Since the effect of the SB334867+hemopressin group was similar to the effect of SB334867 alone, it is thought that the effect of orexins on the cannabinoid pathway may more effective than the hemopressin. In SB334867+AM-251 groups, SWDs activity significantly reduced and the proconvulsant effect of AM-251 was blocked by SB334867. In OX-A+AM-251 group, SWDs activity decreased. This results may show that the orexinergic system is more effective than the cannabinoid system.

Keywords: Orexin-A, SB334867, AM-251, ACEA, Hemopressin