

ADMINISTRATION OF AEA DECREASES THE NITROGLICERIN-INDUCED NF- κ B AND COX-2 EXPRESSION IN THE CERVICAL PART OF TRIGEMINAL NUCLEUS OF RATS

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Despite the intensive research, the exact mechanism of migraine is not fully understood, but the activation and sensitization of the trigeminal system is essential during the attacks. In this context, cannabinoid receptor (CB) agonists may be involved in the pathomechanism of migraine.

Systemic administration of the nitric oxide donor nitroglycerin (NTG) can provoke migraine attacks in migraineurs. Nuclear factor kappa B (NF- κ B) and cyclooxygenase-2 (COX-2) have a pivotal role in the processing of pain and inflammation.

Our aim was to examine the modulatory effects of anandamide (AEA) – CB1 and CB2 agonist - on the NTG-induced expression of NF- κ B and COX-2 in the upper cervical spinal cord of rats, where most of the trigeminal nociceptive afferents convey.

Adult male rats (n=44) were used. Half of the animals received intraperitoneal NTG (10mg/kg) four hours before the experiments, the remaining rats got the placebo of NTG. Half of the NTG and placebo treated animals also received AEA (2x5mg/kg half hour before and one hour after the other treatment), whereas the remaining rats were injected only with vehicle of AEA. Then the animals were perfused transcardially and the cervical spinal cords were removed for immunohistochemistry and Western blotting.

We found that NTG causes increase in NF- κ B and COX-2 expression in the caudal trigeminal nucleus and AEA treatment successfully attenuated this effect.

AEA may have a modulatory effect on the activation and the sensitization of the trigeminal system via CBs. These findings indicate that the cannabinoid system may have an important role in migraine.