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Poster Presentation

The Role of Neuronal Nitric Oxide Synthase on the Anti-Seizure Effects of 5-HT1A Receptors in Perforant Pathway Kindling Model in Rat

Zinat Heidarnia[1], Mohammad Mohammadzadeh[2*], Sajad Sahab Negah[3]

[1]Physiology Department, Sabzewar University of Medical Sciences, Sabzewar, Iran
[2]Physiology Department, Mashhad University of Medical Sciences, Mashhad, Iran
[3]Neuroscience Department, Mashhad University of Medical Sciences, Mashhad, Iran

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Abstract

Neuronal nitric oxide synthase (nNOS) plays a role in synaptic potentiation and kindling process.The relationship between nNOS and 5-HT1A receptors also nearly has been specified. In this research,we investigate the role of nNOS on the anticonvulsant effect of 5-HT1A receptors. 24 male (280 ± 30 g) were randomly assigned to four groups (vehicle,NI,Way 100635 and NI + Way100635) (n = 6). Animals received one of the above compounds 30 min before application of the kindling stimulus. In the NI + Way100635 group, 10 min later Intra ventricle injection Way100635, intraperitoneal nitroindazole (NI) was injected. After application daily stimulation (12 times a day, with a 5 minute interval), up to five days, the seizure and electrophysiological quantities (after discharge duration and local field potentials) were recorded and measured. Data analysis showed that the Way100635 and NI+Way groups were kindled significantly faster than the vehicle group ($P < 0.001$).The changes in afterdischarge duration increased in the NI + Way group over the five days when compared to the control group, but was not significant ($P > 0.05$). Also, the slope of field potentials in the NI + Way group was significantly higher than that of the vehicle group ($P < 0.05$). Likely, nNOS is one of the mediators of the inhibitory effect of serotonin 5-HT1A receptors, and activating this pathway augments the anticonvulsant effects of serotonin.

Keywords: Serotonin, Kindling, Nitric Oxide Synthase, Seizure

Corresponding Author: Mohammad Mohammadzadeh

E-mail: *mohammadzadehmh@mums.ac.ir*

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