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Poster Presentation

Electrophysiological Effects of Cannabinoid Receptor Antagonist AM251 on Harmaline Toxicity in Rat's Cerebellar Vermis Slices

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Abstract

Introduction: The Cannabinoid receptors (CBR) densities are high within the cerebellum. Cannabinoid receptors manipulations have been reported to cause altering the cerebellar functions. *harmaline* have immune-modulatory effects in several studies. i.e., significant anti-inflammatory effect via the inhibition of prostaglandin E2 (PGE2) and tumor necrosis factor alpha (TNF- α). Endocannabinoid system has some therapeutic effects in the nervous system. In the present work, the electrophysiological effects of central cannabinoid receptors modulation, particularly in the cerebellum, upon harmaline neurotoxicity were studied using whole cell patch clamp recording in the current clamp mode. **Materials and Methods:** In this study whole cell recording done from soma of purkinje cells in cerebellar vermis slices. The changes in voltage and the active and passive properties of membrane in Current clamp configuration recorded. Rats aged 4 weeks selected and grouped in 3, the control, harmaline and the AM251 as cannabinoid antagonist. Whole cell patch clamp performed on purkinje cells. All data records and reported by appropriate graphs. **Results:** Data from spontaneous activity showed despite some significant change seen in comparison to control but no effect on deteriorations caused by harmaline. In positive charge protocols there are significant decrease in number of action potential in 500 ms positive charge. Also significant decreased in number of rebound action potential in response to applying negative charge. Number of action potential event during 500 ms positive charge (0.1 to 0.5 nA) by 0.1 nA and 0.2 nA significantly decreased in comparison to control and harmaline groups but not in higher charges. **Conclusion:** The result showed some degree of protective effects of cannabinoid antagonist against deterioration caused by harmaline. It may be suggest that this parameter will be best test by other cannabinoids and different doses of these compounds.

Keywords: Harmaline tremor, Cannabinoid receptor, Purkinje cell

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