

Flavonoids from Saperavi decrease frequency and amplitude of epileptiform discharges in CA1 field of the hippocampus

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In recent years, treatment strategy for the neurodegenerative disorders focuses on flavonoids - plant antioxidants, which are characterized by anti-allergic, anti-inflammatory, neuroprotective activity [1]. Previously we have investigated antioxidant, anti-amnesic and neuroprotective potency of flavonoids from Saperavi (SF) in different series of experiments [2, 3].

The aim of the present work was to define the influence of early postnatal feeding of rats with SF on electrophysiological characteristics of neurons in the CA1 field of the hippocampus. The specific objectives were to investigate the effects of SF on background spiking activity and frequency/amplitude characteristics of epileptiform discharges induced by high frequency electrical stimulation.

In vivo electrophysiological experiments were carried out on both male and female wild type albino rats weighting 120-150g, who in early postnatal period (P7-P15) had received SF extract as a food additive (25mg/kg). Rats of the control group in the same period received the corresponding volume of vehicle. Stainless steel three polar screw electrodes were stereotaxically implanted in the CA1 field of the hippocampus in ketamine anesthetized rats (calyptol-10ml: 500mg ketamine) according to the maps of Paxinos and Watson. Intrahippocampal stimulation and recordings were obtained using coordinates: AP-3.8mm, L-2.8/2.3mm, H-2.8/2.6mm. High frequency unilateral stimulation (the rectangular voltage pulse 1500-2000impulses, 5-8v, 0.2-0.6msec, total duration of stimulation 4-5sec.) were applied by Master8. Recording of hippocampal activity and analyses of obtained data were performed by Chart5 program. For statistical analyses was used program PRIZMA.

Our experiment showed that early postnatal feeding of rats with SF raising the network desynchronization: in the background activity the number of discharges was increasing and the amplitude was decreased. High frequency electrical stimulation in SF fed animals induces epileptiform discharges with lower amplitude and frequency patterns compare to the control group.

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Reference:

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