

Effects of Leptin on NADPH-d Reactivity in the Dentate Gyrus of Rats

Teodor Angelov^{1}, Milen Hristov², Boycho Landzhov¹*

¹ Department of Anatomy, Histology and Embryology, Faculty of Medicine, Medical University of Sofia, Bulgaria

² Department of Pharmacology and Toxicology, Faculty of Medicine, Medical University of Sofia, Bulgaria

*Corresponding author e-mail: teodor_angelovv@abv.bg

Leptin is a peptide hormone regulating food intake and body weight. The effects of leptin are mediated via leptin receptors present in the central nervous system (including hippocampal regions and gyrus dentatus). It is known that leptin induces phosphorylation of the neuronal isoform of nitric oxide synthase (nNOS) in defined hypothalamic regions. Identification of specific extrahypothalamic sites of leptin-induced activation of nNOS has been largely ignored. The present study was therefore undertaken to investigate the effects of leptin on NO expression in gyrus dentatus of rats. Six male Wistar rats were injected i.p. with either leptin (0,5 mg/kg) or saline (control group) and anesthetized 45 min later. Serial coronal sections were stained with the histochemical nicotinamide adenine dinucleotide phosphate diaphorase (NADPH-d) technique and examined with a light microscope. Our results demonstrated that leptin-treated animals had a significant increase in NADPH-d positive neurons in the dentate gyrus compared to that seen in the control group. These data suggest that leptin results in increased expression of NO in dentate gyrus of rats. We speculate that leptin may exert an effect on the hippocampal neurogenesis or neuroprotective properties by activating the endogenous nitric oxide synthase system.

Key words: leptin, nitric oxide, NADPH-d, dentate gyrus, rats