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Neuroprotective proline containing dipeptide Noopept ameliorates NGF and BDNF deficit in pancreas and liver caused by diabetogenic toxin streptozotocine on Wistar rats

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Noopept (N-phenylacetyl-L-prolylglycine ethyl ester) revealed wide spectrum of neuroprotective effects and one of the mechanisms underlying this neuroprotection is the increase of Nerve Growth Factor (NGF) and Brain-derived Neurotrophic Factor (BDNF) expression in hippocampus and hypothalamus. Features of neurons and pancreatic beta-cells similarity as well as insufficient data on neurotrophins on diabetes prompted us to study the effects of Noopept 0.5 mg/kg i.p. for 14 days, before streptozotocine 40 mg/kg i.p. on rats. Irrespective of well-known STZ ability to produce hyperglycemia and weight loss, we revealed pronounced decrease of NGF and BDNF content in pancreatic and hepatic tissues. Noopept was firstly shown to ameliorate hyperglycemia, weight loss as well as to overcome NGF and BDNF deficits in these organs but from the recent study of Vahitova et al. it revealed Noopept ability to increase the content of HIF-1. Involvement of HIF-1 deficiency in pathogenesis of diabetes combined with HIF ability to increase neurotrophins expression allow to consider HIF-positive effects of Noopept as one of the mechanism underlying above-listed anti-diabetic effect of Noopept.

Biography

Ostrovskaya R is a Professor and the Main Researcher of Psychopharmacology Department at Zakusov State Institute of Pharmacology. She is the author of more than 250 publications and 20 patents. Her main topic of research concerns the problem of Alzheimer disease-diabetes interplay, putative similarity of mechanisms involved in cytoprotection of neurons and pancreatic beta-cells, neurotrophins based treatment and protection of diabetes 2, systemically active dipeptides and developing diabetes models and prevention.

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