Ameliorating effects of new neurotensin analogue and vasoactive intestinal peptide in parkinson's disease model

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Parkinson's disease (PD) results in progressive loss of dopamine neurons and leads to movement disorders such as tremor at rest, slowness of voluntary movements, rigidity, postural instability. Using rat experimental model of PD via unilateral injection into striatum (target coordinates AP = +0.2; LR = -3.0; H = -5.6 according to stereotaxic atlas) of 6-hydroxydopamine we aimed to study: i) effects of new neurotensin analogue (NT2) on rat motor performance and brain activity; ii) effects of vasoactive intestinal peptide on the levels of glutathione reductase activity and lipid peroxidation in rat brain. Our results demonstrated gradual improvement in the motor performance of NT2-treated animals as compared to control PD-rats treated with saline. At the same time cortical EEG showed differences in spectral composition and patterns above the lesioned areas and their hemispheric counterparts in the PD-rats treated with NT2 as compared to saline treated PD-animals. Our experiments also demonstrated that vasoactive intestinal peptide decreased the activity of enzyme glutathione reductase and inhibited lipid peroxidation in the experimental model of Parkinson's disease counteracting in such way against membrane damage and ameliorating the cell viability. In conclusion the beneficial effects of vasoactive intestinal peptide and new neurotensin analogue outlined in the present investigations may represent a new therapeutic option for control of some Parkinson's disease disorders.