CEREBROLYSIN™ INDUCES HIPPOCAMPAL NEUROGENESIS IN A TRANSGENIC MOUSE MODEL OVEREXPRESSING HUMAN WILD-TYPE ALPHA-SYNUCLEIN

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Neurodegenerative diseases like Parkinson's disease (PD) are characterized by a progressive neuronal loss related to motor impairment. One pre-motor sign in PD is cognitive dysfunction possibly linked to impaired hippocampal neurogenesis. Decreased proliferation of neural precursor cells (NPC) was described in both neurogenic regions (SVZ/olfactory bulb system and the hippocampus) of PD patients as well as in PD animal models. In particular, a decreased hippocampal neurogenesis due to diminished survival of newly generated cells was observed in the transgenic mice overexpressing human wild-type alpha-synuclein under the PDGF-promoter (PDGF::hWTa-syn). Cerebrolysin™ (CBL), a peptide mixture with neurotrophic effects, reduces neurodegenerative changes in models of Alzheimer's disease (AD). Previous studies have pointed towards a potent effect of CBL to increase hippocampal neurogenesis in this AD animal model by protecting NPC from apoptotic cell death. Aim of the current study was to explore the potential of CBL to modulate neurogenesis in PDGF::hWTa-syn transgenic mice. A total of 32 sex- and age-matched mice received CBL (5ml/kg/day) or vehicle (saline) once daily for 30 days intraperitoneally. Five days after treatment initiation mice were injected with Bromodeoxyuridine (BrdU) for 5 days. To elucidate neurotrophic effects of CBL, the survival of newly generated cells was determined in the hippocampus. Treatment with CBL showed a significant increase of newly generated hippocampal cells. Level of restoration was significant higher particularly in female CBL treated transgenic mice. Perspective, cell fate and death will be examined whether CBL is able to fully restore hippocampal neurogenesis by diminishing apoptosis.