IGF-1 INDUCED SURVIVAL ASTROCYTES, AND PROTECTS MPP⁺-INDUCED DEPAMINERGIC NEURODEGENERATION

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With an increase in the aging population, the incidence of Parkinson’s disease (PD), a disabling neurodegenerative disorder mainly affecting motor function, will inevitably present a challenge to an medical research. Insulin like growth factor-1 (IGF-1) can exert neuroprotective effects on the substantia nigra pars compacta (SNc) dopaminergic (DA) neurons that are undergoing degeneration in Parkinson’s disease (PD). In an attempt to investigate the molecular signaling mechanisms underlying IGF-1 protection the DA neurons from degeneration, we established IGF-1 treated model in which with 1-methyl-4-phenylpyridinium (MPP⁺) of glial cell-line. Three days after exposure of MPP* with or without IGF-1, the medium of glial-cell line was immunostaining and measurement of immunoreactivity and mRNA content of metallothionein (MT), and measured dopaminergic survive. It was found that IGF-1 and MT significantly increased highly the survival rate of dopaminergic neuron against MPP⁺-induced neurotoxicity. However, just IGF-1 and MT induced lower the survival rate of dopaminergic neuron.

These results indicate that the function of IGF-1 via MT induced dopaminergic survival.