

Glia derived neurotrophic factor: Its regulation by vitamin D and possible relation to neurodegeneration

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Whether or not glia derived neurotrophic factor (GDNF) has a role in disease mechanism of bipolar disorders has been a matter of debate. Due to their role in regulation of synaptic plasticity in addition to survival and growth of neurons neurotrophins are important targets. Recent studies have pointed out that vitamin D can exert protective effects on nervous system by modulating the synthesis of neurotrophins, calcium channels and calcium binding proteins. The expression of neurotrophic factors are regulated via vitamin D in several cell types. Our previous study has showed that vitamin D receptor silencing showed similar effects with beta amyloid treatment and up regulated L type voltage sensitive calcium channels $\alpha 1C$ (LVSCC A1C) and nerve growth factor (NGF). These results might indicate the potential role of vitamin D- VDR pathway in neurodegeneration. The aim of this study was to investigate the alterations in the level of GDNF release by 1,25-dihydroxyvitamin D_3 treatment in primary cortical neurons. Cerebral cortex dissected from brains of Sprague Dawley rat embryos on the embryonic day 16 and cultured. GDNF levels released to the culture medium were determined by ELISA. Our results showed that vitamin D treatment induced GDNF release to the culture media. These results indicated that the GDNF expression might be regulated by vitamin D in cortical neurons and vitamin D supplementation might be used as a tool for regulating neurotrophic factors in neurodegenerative disorders.

Biography

Turgut Ulutin has completed his PhD from Marmara University, Faculty of Medicine Department of Biochemistry and Post-doctoral studies from Istanbul University, Faculty of Medicine. He is the Head of Department of Medical Biology, Cerrahpasa Faculty of Medicine, Istanbul University. He is also the Head of National Society of Medical Biology of Turkey. He has published more than 25 papers in reputed journals.

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