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## Environmental enrichment improves the anti-cataleptic effect of L-DOPA in Parkinsonian rats: A possible role of endogenous ligands of Trkb receptors

Alireza Majdi

Tabriz University of Medical Sciences, Iran

L-DOPA-induced motor fluctuations remain as leading causes of disability in Parkinson's disease (PD). Thence, designing strategies to treat L-DOPA-induced motor disorders is a high priority. Environmental enrichment (EE) is defined as improvement of living environment. There is no report on EE effects on the L-DOPA effectiveness in PD models. PD was induced by intra substantia nigra injection of 6-hydroxy dopamine in rats. After 3 weeks, rats that showed catalepsy in bar test. Half of these rats were housed in normal cages and half of them were kept in enriched cages, for 4 weeks. Over this period groups received L-DOPA and the effects of housing and L-DOPA on the catalepsy were assessed on days 5, 10, 15, 20 and 25 after initiation of the treatment protocol. To determine the possible involvement of activation of TrkB receptors in this effect, L-DOPA treated rats in enriched cages received systemic administration of TrkB-IgG, as an antagonist of the TrkB receptors, on the day 26 after initiation of L-DOPA. At the end of study, brain's BDNF level was measure by ELISA method. In rats housed in normal cages, L-DOPA reversed catalepsy on the days 5, 10, 15, 20 but its anti-cataleptic effect was abolished on the day 25 after imitation of the treatment. In contrast, rats housing in enriched cages potentiated the L-DOPA's anti-Parkinsonian effect where until 25th day L-DOPA effectively reversed catalepsy. Also, TrkB-IgG treatment blocked anti-cataleptic effect of L-DOPA. It seems that EE through modulation of BDNF/TrkB receptors signaling pathway improves L-DOPA anti-Parkinsonian effect.

### Biography

Alireza Majdi is a final year medical student at Tabriz University of Medical Sciences, Iran. He is very keen on neurology and neurosciences and has been an active member of the Neurosciences Research Center (NSRC) since 2014. He has published more than 14 papers in reputed journals and conferences.

[alimaj1992@yahoo.com](mailto:alimaj1992@yahoo.com)

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