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Title: Brain derived neurotrophic factor (BDNF), its tyrosine kinase receptor B (TrkB) and nicotine

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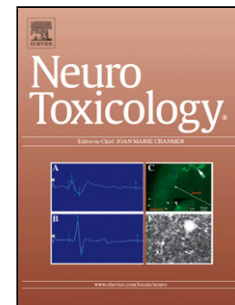
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Brain derived neurotrophic factor (BDNF), its tyrosine kinase receptor B (TrkB) and nicotine.

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Abbreviated title: BDNF & TrkB after nicotine exposures

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Highlights

- Direct cigarette smoking and nicotine intake affect BDNF levels in various brain regions.
- Prenatal exposures have long lasting effects on BDNF expression in the offspring.
- Changes in BDNF as a result of nicotine could contribute to altered physiologies of respiration and coordination of balance.

ABSTRACT

Nicotine is the major neurotoxicant in cigarettes that affects many transmitter systems within the brain as well as other factors, including the growth factors. Brain derived neurotrophic factor (BDNF), is the most abundant growth factor in the brain and plays a critical role in early new neuron differentiation, development and synapsis growth, and the survival of fully developed neurons and synaptic activity. Over the past 3 decades, data has emerged on the effects of nicotine and cigarette smoke exposure on the expression of BDNF and its primary specific receptor tyrosine kinase receptor B (TrkB). This review summarizes data regarding the changes in brain BDNF expression after nicotine or cigarette smoke exposure, and discusses their implications considering BDNF's functional roles.

Keywords: animal models, cigarette smoke exposure, nicotine, neurotrophic factor, infant, NTRK2.

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