

17 β -estradiol modulates NGF and BDNF expression through ER β mediated ERK signaling in cortical astrocytes

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Abstract

17 β -estradiol is known to exert neurotrophic and neuroprotective effects through classical estrogen receptors [ERs], ER α and ER β , on a variety of cell types either by genomic or non-genomic actions. The actions of estradiol on glial cells are important to maintain metabolic functions of the nervous system. Astrocytes are considered to be active participants in brain activity because of their ability to release growth factors, including neurotrophins. Present in vitro studies show that 17 β -estradiol modulates NGF and BDNF expression in time-dependent manner and ERK acts as secondary messenger for estradiol's action. 17 β -estradiol is involved in survival of cortical astrocytes. In conclusion, this study indicates vital role of ER β mediated ERK signalling for regulation of NGF and BDNF expression along with cell viability of cortical astrocytes which further confirms the role of ERs, particularly ER β in glial cells' functions and viability.

Keywords : neurotrophic; neurotrophins; astrocytes; signalling