Identification of early response genes in MPP+ treated human neuroblastoma SH-EP cells

도진환†, 정근욱
동양대학교
(jinhwando@dyu.ac.kr†)

1-Metyl-4-phenylpyridinium (MPP+), an active metabolite of MPTP, produces in vivo and in vitro cellular changes characteristic of Parkinson's disease (PD), such as cytotoxicity, resulting in apoptosis. In this study, genome-wide gene expression changes at 3, 9 and 12 h after MPP+ treatment in human neuroblastoma SH-EP cells were estimated with commercial whole genome microarray. The numbers of up-regulated genes were 803, 567 and 797, respectively for 3, 9 and 12 h. Of these, several genes such as BNDF (brain-derived neurotrophic factor), FGF2 (fibroblast growth factor 2), MIR1974 and CLDN1 were commonly up-regulated genes through the time points. As it has been reported that BNDF protects neurons via transient activation of the Ras/MAPK pathway and the PI3-K/Akt pathway [1], and intrastriatal infusions of FGF2 increases protection in the neurotoxicity induced lesioned nigrostriatal DA system [2], the continued upregulation of the BNDF and FGF2 genes in MPP+ treated SH-EP cells might be associated with early cellular strategy for survival against MPP+ toxicity.