[P-14]

Involvement of P38 Mapk and Gap Junctional Intercellular Communication (Gjic) in 12-O-Tetradecanoyl Phorbol 13-Acetate-Induced Stellation of Neurosphere-Derived Cells

Se-Ran Yang[1], Nam-Shik Ahn[1], Ji-Won Jung[1], Joon-Suk Park[1], Byoung-Su Yoon[2], Yong-Soon Lee[1,*], and Kyung-Sun Kang[1,*]

[1]*Department of Veterinary Public Health, College of Veterinary Medicine, Seoul National University,* [2]*Laboratory of Genetics, Department of Biology, College of Natural Science,Kyonggi University*

Primary cultures of rat fetus brain exhibit phenotypes of neuron, oligodendrocyte, and astrocyte from "neurospheres". To understand the role of mitogen-activated protein kinase (MAPK) cascade and gap junctional intercellular communication (GJIC) in the differentiation of neurosphere-derived astrocyte, we investigated the effects of 12-O-tetradecanoylphorbol-13-acetate (TPA) on the cultured astrocyte morphology. Cultured rat neurosphere-derived astrocytes exhibited flattened, polygonal morphology in the absence of stimulation, but differentiated into process-bearing stellate cells in response to TPA (0-40 ng/ml). TPA-induced astrocyte stellation was blocked significantly by MEK kinase inhibitor (PD98059, 40 uM) and p38 MAK kinase inhibitor (SB203580, 8 uM), both morphologically and in western blot analysis. In the regulation of GJIC, TPA induced hyperphosphorylation of connexin 43 (Cx43) with no changes in Cx32 levels. In addition, pretreatment with PD98059 and SB203580 inhibited TPA-induced hyperphosphorylation of Cx43 protein. Taken together, these results suggested that ERKs and p38 pathways involving GJIC might play a crucial role in the stellation of neurosphere-derived astrocyte.

Keyword : Neurosphere, Gap junctional intercellular communication, p38, stellation