Sez-6 May Play an Important Role in Neurite Outgrowth through the PKC\(\beta\) Signaling Pathways

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Seizure-related gene 6 (sez-6) was originally identified in a study of pentylenetetrazole-treated cortical neurons. Further studies on the structure and expression pattern suggested that Sez-6 may play an important role in neuronal development and function. In the present study, PC12 cells were used as a model to investigate the role of Sez-6 in neurite outgrowth. After a period of NGF treatment, the expression of Sez-6 in PC12 cells was increased. When Sez-6 expression was suppressed by the addition of an effective short hairpin RNA (shRNA) plasmid, the neurite outgrowth was significantly inhibited. In addition, we detected the expression level of protein kinase C\(\beta\) (PKC\(\beta\)), and found that the PKC\(\beta\) protein level was reduced in the differentiated PC12 cells but increased in PC12 cells lacking Sez-6. Taken together, our results indicate that Sez-6 acts on the neurite outgrowth of PC12 cells likely through the PKC\(\beta\) signaling pathways.

Key words: Sez-6, PKC\(\beta\), Neurite Outgrowth