

D-55 NGF-Induced Differentiation of PC12 Cells Involves Akt-GSK-3 Signaling

박의균*, 하병근, 양성일¹, 방옥선, 강신성
경북대학교 자연과학대학 생물학과, ¹전국대학교 의과대학 약리학교실

Akt, a serine/threonine kinase has been known to be activated by nerve growth factor (NGF) via phosphatidylinositol-3 kinase (PI-3K) in PC12 cells. It was reported that PI-3K signaling via Akt is a mediator of insulin-like growth factor I-induced neuronal survival. It was also reported that p70^{S6k} and glycogen synthase kinase-3 (GSK-3) are the downstream molecules of Akt signaling. In our experiment, it appeared that prolonged NGF-treatment lead to differentiation of PC12 cells and that high level of Akt activity as determined by histone H2B phosphorylation was sustained in these cultures. However, the treatment of EGF, which is known to stimulate cell growth, did not stimulated Akt activity. To identify the downstream molecule of Akt during NGF-induced neuronal differentiation, phosphorylation pattern of two targets of Akt in NGF-treated PC12 cells were analyzed. Consistent with neurite elongation, phosphorylation of GSK-3 by Akt was increased upto 3 to 4 fold at 2-day of culture in the presence of NGF, but not of p70S6 kinase. These results suggest that Akt may participate in neuronal cell differentiation as well as cell survival, and that Akt-GSK-3 signaling may be involved in NGF-induced differentiation of PC12 cells.

D-56 Hematological study on the bite of leech, *Hirudo nipponia*.

홍석진*, 강계원
한국과학기술원 생물과학과

Blood-sucking leech has a number of peptides in its saliva to overcome the hosts haemostatic mechanisms. Hirudin is a representative peptide in leech saliva. The present study showed that a Korean native leech, *Hirudo nipponia* has anticoagulation and antiaggregating activity which causes prolonged bleeding time and clotting time. The bleeding time after a bite is 210 min on the average and is longer than *Macrobdella decora* but shorter than *Hirudo medicinalis*. The coagulation time of blood flowing from the leech bite is prolonged compared with that of control bleeding time by the template device. It takes approximately 15 min of bleeding time for recovery a normal coagulation state of blood. A single blood sucking increased the body weight of *H. nipponia* is 594%. Platelet smears also showed no aggregation after 15 min of blood flowing. Screening of various anticoagulants from *H. nipponia* resulted that thrombin specific inhibitor which is contained in saliva, plays a crucial role in anticoagulation.