

[P-18]**Erythropoietin Promotes Cell Proliferation:
Role of Transcription Factors**Seu Run Sung¹, Dong Ju Son¹, Seung Ho Lee¹, Dong Cheul Moon¹,Do Young Yun², Sukgil Song¹, Jin Tae Hong¹¹College of Pharmacy Chungbuk National University, ²Korea Research Institute of Bioscience and Biotechnology, Korea

Erythropoietin (EPO) is a 30.4 kDa glycoprotein that serves as the primary regulator of red blood cell (RBC) production in mammals. EPO is essential growth factor that promotes proliferation and differentiation of erythroid lineage cells and leads to the increase in circulating RBC volume. EPO also acts synergistically with several growth factors (SCF, GM-CSF, IL-3, and IGF-1) to cause maturation and proliferation of erythroid progenitor cells (primarily colony-forming unit-E). EPO has been demonstrated to protect hypoxia or glutamate-induced neuronal cell death. Therefore, preliminary our study was designed to investigate whether EPO can protect or prevent H₂O₂ and glutamate-induced cell death in several cell lines(RAW264.7, SK-N-SH and PC12 cell). However, even 48 or 72 hr pre or post treatment of EPO did not show any protect(prevent) effects. In the next study, we investigated whether EPO may promote cell proliferation in these cell lines. Cells were seeded in 96-well culture plates, and cultured in DMEM with 10% FBS at 37 °C for 24 hr. The cells were then further cultured on medium with or without FBS for 24, 48 and 72 hr, respectively. Twenty-four hours before cell viability assay, the cells were treated with several dose of EPO(1-20 U/ml) or vehicle, and then cell proliferations were determined by a manufactured cell counting kit as well as morphological observation. In the results, there is no effect of EPO on the proliferation of cells cultured in complete medium but EPO treatment on FBS free medium promoted proliferation of RAW 264.7 cell cultured in dose-dependent. However promoting effect of EPO on other cell proliferation was not observed. Since transcriptional factors and related gene expression have been known to be closely associated with cell proliferation of Erythroid cells by EPO, we also determined whether EPO could stimulate cell proliferation with similar mechanisms in RAW 264.7 cell and PC12 cell. These results indicated that EPO may promote the proliferation of

RAW 264.7 cells in a cell type specific manner, and AP-1 and NF- κ B signal could be involved in. Further studies to identify the related proliferative mechanisms of EPO using the biological approaches are in progress.

Keyword: Erythropoietin, cell death, proliferation