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Puromycin aminonucleoside 투여 후 사구체 상피세포의 유전자 발현 양상에 관한 연구

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Response of Glomerular Epithelial Cell to Injury; Gene Expression Profile after Puromycin Aminonucleoside Treatment

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Objective : Renal glomerular epithelial cells play an important role in glomerular filtration barrier. In this study, to obtain more comprehensive information about the response of podocyte to injury, the change in the gene expression profile of podocyte in response to injury by puromycin aminonucleoside (PAN) was analyzed.

Method and Results : Conditionally immortalized mouse podocyte cell lines were cultivated and differentiated. Gene expression profile of podocytes untreated or treated with 25 mg/mL PAN for 24, 48, 72 hrs was analyzed. At each time point of treatment, 11, 8, and 22 genes were found to be differentially expressed and they were related to function of cell adhesion (Lama1, Pcdh12, Pcdhb13, Pcdhgb2), calcium ion binding (Lama 1, Mmp3, Mmp12, Pcdh12, Pcdhb13, Pcdhgb2) and extracelluar matrix (Lama1, Mmp3, Mmp12). Only two genes (Cst7, Gabrg1) were up-regulated and the others were down-regulated. Through the 72 hrs of PAN treatment, mRNA expression of laminin a1 decreased, as did laminin a1 antigen amount. Real time PCR assay also revealed decreased expression of protocadherin γB2.

Conclusion : Using global gene expression profile analysis, we found that podocytes respond to injury induced by PAN by down-regulating expression of genes involved in cell adhesion and extracellular matrix.