

근위세뇨관세포에서 항산화제가 인독실황산염에 의한 세포 자연사에 미치는 영향

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Antioxidants Reverse the Indoxyl Sulfate-induced Apoptosis in Proximal Tubular Cells

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Indoxyl sulfate (IS) is one of major uremic toxins. Impacts of IS on chronic kidney disease progression are reported from several studies and it is known that oxidative stress may have a critical role. However, there are sparse data to understand relating mechanism and protein expression. In this study, we investigated the cell viability and protein expression affected by IS and evaluated the effect of an antioxidant on IS-induced apoptosis. Human proximal tubular cells (HK-2 cells) were exposed to IS and cell viability was observed. Protein including nrf2, HO-1, ERK, JNK, Akt and NOS3 were also detected and quantified. Thereafter, cell viability was determined using catalase, an antioxidant, in IS-treated HK-2 cells. HK-2 cells were significantly decreased depending on dose of IS after 24 hours treatment. We could find that nrf2, ERK and pJNK decreased and HO-1 increased by IS in a dose-dependent manner. But expression of Akt and NOS3 were not affected in this study. This study showed that treatment with catalase resulted in a significant increase of cell viability in HK-2 cells exposed to IS. In conclusion, cell viability was decreased as exposure to IS in a dose-dependent manner, and this mechanism might include downregulation of nrf2, ERK and JNK and upregulation of HO-1. Moreover, IS-induced apoptosis could be reversed by treatment with antioxidants.

Key Words: 인독실황산염, 근위세뇨관세포, 항산화제

Indoxyl sulfate, Proximal tubular cells, Antioxidant