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cisplatin 유도된 신장손상에서 NQO1 결핍으로 인한 자가포식작용 발현 변화 연구

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Absence of NQO1 Alter Autophagy in Cisplatin Induced Renal Injury

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Introduction: Autophagy is a catabolic process that degrades damaged proteins and organelles in mammalian cells and activated under various pathologic condition including acute renal failure. NAD(P)H:quinone oxidoreductase 1 (NQO1) protects against various pathogenesis and disruption of NQO1 enhances susceptibility to the stimuli and disease conditions. The aim of this study was to explore whether NQO1 could regulate the autophagy expression in the cisplatin-acute kidney injury (AKI).

Material & Methods: To explore the impact of NQO1 on the autophagy in AKI, we used cisplatin AKI model with NQO1 knockdown C57BL/6N mice. The kidneys were collected 3 days after cisplatin (18 mg/kg) injection and subjected to the Western-blot and immunohistochemistry assay.

Results: Although cisplatin injection induced renal tubular damages in the both NQO1 intact and NQO1 knockout mice, the renal damage and function loss were more severe in the NQO1 knockout mice than NQO1 intact mice. Cytoprotective proteins, NF-E2-related factor (Nrf) 2 and sirtuin 1, were relatively suppressed in the NQO1 knockout mice. Moreover, NQO1 deletion resulted in the increased autophagy process, which was confirmed with the autophagy-related protein 7, light chain 3, and lysosomal membrane proteins and the strong immunoreactivity were detected in the proximal tubule of outer medulla.

Conclusion: These finding suggested that the deletion of NQO1 might suppress cytoprotective genes and these, in turn, affect renal autophagy in cisplatin-AKI.

Key Words: 자가포식작용, 시스플라틴, NQO1
Autophagy, Cisplatin, NQO1