

## 내독소 유발 급성신손상에서 GADD45 gamma의 신장 보호 역할

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### GADD45 Gamma Protects the Kidney in Acute Kidney Injury Induced by Lipopolysaccharide

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**Background:** Growth arrest and DNA-damage-inducible protein GADD45 gamma is a protein which is involved in DNA repair, cell cycle control and apoptosis. GADD45 gamma is induced by various cellular stresses and evidence suggests that GADD45 gamma may be involved in kidney damage. (Yu S. Am J Nephrol 2009; Shin GT Kidney int 2009). In the present study, we investigated the role of GADD45 gamma in acute kidney injury induced by lipopolysaccharide (LPS).

**Methods:** The GADD45 gamma wild-type (WT) and KO mice with C57BL/6 background were used in this study. A single dose of 10ug/g LPS was injected intraperitoneally and then mice were sacrificed at 30 min, 1 h, 2 h and 24 h. Gene and protein expressions were observed by RT-PCR, Western blots and ELISA. Pro-inflammatory cytokines in serum 2 h after LPS injection were screened with proteome array kits. Serum and urine creatinines (Cr) were measured by the Jaffe method using assay kits.

**Results:** GADD45 gamma was significantly induced by LPS in the kidney cortex of WT mice whereas no expression was observed in KO mice. Serum Cr was significantly elevated 24 h after LPS injection in both WT and KO mice, and was significantly higher in KO mice than WT mice at this time point. KO mice after LPS injection showed significantly decreased urine output with decreased 24 h Cr clearance. The screening for 40 pro-inflammatory cytokines in serum showed that 13 cytokines including TNF-alpha and IL-6 were elevated in both WT and KO mice, and there was no difference in the elevation of cytokines between WT and KO mice. In kidney tissue, collagen I and Kim-1 proteins were significantly elevated in KO mice compared to WT mice. The activation of P38 MAPK was down-regulated 24 h after LPS in WT mice whereas it was persistent in KO mice.

**Conclusions:** This study shows that GADD45 gamma plays a role in protecting the kidneys from LPS-induced acute kidney injury.

**Key Words:** GADD45g, 급성신손상, LPS  
GADD45g, Acute kidney injury, LPS