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고포도당 유도 족세포 손상에서 curcumin의 효과

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Curcumin Prevents High Glucose-induced Podocyte Injury by Suppressing Inflammatory Response and Oxidative Stress

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Aim: Podocyte injury is relevant to diabetic nephropathy (DN). It has been recently reported that curcumin (diferuloylmethane), a major polyphenol of turmeric, has anti-inflammatory and antioxidative effects on DN. However, the mechanisms underlying these protective effects on podocyte remain unclear. In this study, we investigated the effects of curcumin on high glucose-induced podocyte injury.

Methods: Intracellular ROS (reactive oxygen species) was observed by fluorescent microscope and fluorometer after the incubation of differentiated mouse podocytes. Podocytes were divided into three groups: (1) normal glucose; (2) high glucose (30 mM D-glucose); and (3) high glucose and curcumin (50μM). VEGF (vascular endothelial growth factor), nephrin, TGF (transforming growth factor)-β, and CCL2 (C-C motif chemokine ligand 2) mRNA expression were analyzed by quantitative real-time PCR. Cellular TGF-β and nephrin protein expression were measured by western blot. The level of CCL2 in supernatant was measured by ELISA.

Results: Elevated intracellular ROS in podocytes stimulated by high glucose was significantly ameliorated by curcumin treatment. Curcumin also restored VEGF, TGF-β, and CCL2 mRNA up-regulation and nephrin mRNA down-regulation in podocytes treated with high glucose. High glucose-induced changes of TGF-β, nephrin, and CCL2 protein expression were also markedly improved by curcumin treatment.

Conclusion: These results provide that curcumin prevents high glucose-induced podocyte injury by inhibiting oxidative stress and inflammatory pathway.

Key Words: 족세포, Curcumin, 염증
Podocyte, Curcumin, Inflammation