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Klotho effects on lipotoxicity-induced podocyte injury

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Objectives: Although anti-aging gene klotho has been identified as a multi-functional humoral factor, which influences multiple biological processes, the effects of klotho on podocytes in diabetic nephropathy are largely unknown. Thus, we investigated the renoprotective effects of klotho on podocyte injury induced by renal lipid accumulation

Methods: We used immortalized mouse podocytes for *in vitro* system. Podocytes were stimulated with palmitate to induce diabetic mimic condition with or without recombinant klotho. Western blot, quantitative real time-PCR, immunofluorescence, and albumin permeability analysis were carried out to evaluate the effects of klotho on palmitate-induced functional and morphological injury on podocytes.

Results: Palmitate-treated podocytes showed the development of apoptosis, ER stress, oxidative stress, inflammation, and fibrosis. Pretreatment of klotho ameliorated palmitate-induced podocyte injuries. Anti-oxidative markers were significantly decreased in palmitate-treated podocytes, whereas klotho treatment significantly increased those expressions. Also, palmitate-induced actin cytoskeleton disorganization and albumin leakage were recovered by klotho.

Conclusions:

The results suggest that klotho may have a therapeutic effect on lipotoxicity-induced podocyte injury.

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