BAXTER 신진연구비

Klotho 단백질의 autophagy 조절을 통한 신장섬유화에 대한 보호효과

가톨릭대학교 의과대학 내과학교실

윤혜은, 김수정, 김성준, 고은실, 정성진, 박철휘, 양철우, 김용수, 신석준

Klotho Protects Against Mouse Renal Fibrosis by Regulation of Autophagy

Hye Eun Yoon, Soo Jeong Kim, Sung Jun Kim, Eun Sil Koh, Sungjin Chung
Cheol Whee Park, Chul Woo Yang, Yong-Soo Kim, Seok Joon Shin

Department of Internal Medicine College of Medicine The Catholic University of Korea

Background/Aims: Autophagy is a cellular process of degradation of damaged components in the cytoplasm and regulates cell death. Klotho is known to have a renoprotective effect. In this study, we investigated whether Klotho protein protects against renal fibrosis by regulating autophagy in an obstructive kidney model.
Methods: Mice received unilateral ureteral obstruction (UUO) surgery with or without intraperitoneal administration of Klotho protein. We evaluated renal damage and expression of alpha-smooth muscle actin (αSMA), LC3, Akt, mammalian target of rapamycin (mTOR), Bax, and Bcl-2 in the obstructed kidneys on days 1, 3 and 7.
Results: Collagen deposition, the expression of αSMA, and apoptosis, the ratio of Bax to Bcl-2 expression, were significantly lower in the obstructed kidneys of Klotho-treated mice compared with control UUO mice. Klotho administration significantly increased autophagy, the ratio of LC3-II to LC-I, in the obstructed kidneys compared with control UUO mice. The expression of Akt and mTOR was significantly decreased in the obstructed kidneys of the Klotho-treated mice compared with control UUO mice.
Conclusion: Klotho protects against renal fibrosis in the obstructed kidney model by regulation of autophagy.

Key Words: 세포자멸, 자가소화, Klotho, 신장섬유화
Apoptosis, Autophagy, Klotho, Renal fibrosis