F-C9

헨레 고리의 오름가는부분에서의 prox1 발현은 삼투압에 의해 조절된다

가톨릭대학교 의과대학 해부학교실 및 세포사멸질환연구센터

김유미, 김완영, 남선아, 김진

Prox1 Expression in the Ascending Thin Limb of Henle's Loop is Regulated by Osmolality

Yu-Mi Kim, Wan-Young Kim, Sun-Ah Nam, Jin Kim

Anatomy and MRC for Cell Death Disease Research Center The Catholic University of Korea

The transcription factor Prospero-related homeobox 1 (Prox1) is expressed in various internal organs and is related to their differentiations. In a previous study, we found that Prox1 was transiently expressed in the differentiating ascending thin limb (ATL) of Henle's loop in the developing renal papilla and remained only in the ATL in the initial part of renal papilla in adult mouse kidney. Furthermore, Prox1 was expressed in the osmotic conditions within the optimal range in vitro. In the present study, we extend our experiments to the in vivo situation. We examined whether osmolality affects the expression and distribution of Prox1 in the renal medulla in both postnatal developing mice and adult mice. In the first experiment, adult male C57BL/6 mice were randomly divided into 3 groups: dehydrated mice given minimum water, hydrated mice given 3% sucrose in water, and control mice given free access to water for 7 day. In the second experiment, one-day-old pups were administered daily subcutaneous injections of furosemide (30 mg/kg) or vehicle for 4 or 7 days. In the first experiment, the immunoreactivity for Prox1 in the ATL was weak in the initial part of the renal papilla but not in the terminal part of the renal papilla of the normal adult mouse. However, in the hydrated mice, Prox1 was expressed not only in the initial part of the renal papilla but also in the terminal part of the renal papilla. Moreover, the intensity of immunoreactivity for Prox1 was increased in the hydrated mice but markedly decreased in the dehydrated mice compared to the control group. In the second experiment, the immunoreactivity for Prox1 was considerably decreased in the papillae of furosemide-treated group, where the development of the ATL of Henle's loop was delayed, compare to vehicle-treated group. These results suggested that the expression of Prox1 was regulated by osmolality and was required for the differentiation and maintenance of ATL in the developing and adult mouse kidney, respectively.

Key Words: 전사인자, 삼투압, 콩팥 발생
Transcription factors, Osmolality, Renal development