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만성 저칼륨혈증에 의한 암모니아 운반단백질의 세포막 이동

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Chronic Potassium Depletion Induces Apical Targeting of Rh C Glycoprotein in the Collecting Duct

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The ammonia transporter family members, Rh B glycoprotein (Rhbg) and Rh C glycoprotein (Rhcg), appear to play an important role in renal ammonia transport. Chronic potassium (K+) depletion causes altered ammonia metabolism in the kidney. The purpose of this study was to investigate the effect of K+ depletion on Rhbg and Rhcg expression. Sprague Dawley rats received either K+-deficient or control diets for two weeks. K+ depleted rat excreted increased urinary ammonia and expressed increased Rhcg expression, particularly in the outer medullary collecting duct (OMCD). Electron microscopy demonstrated that Rhcg was redistributed from cytoplasmic vesicles to the apical plasma membrane in intercalated cells in the OMCD. In contrast to Rhcg, Rhbg expression was not detectably altered. We conclude that increased expression and redistribution of Rhcg may mediate an important role in the increased renal ammonia excretion in response to chronic K+ depletion. This work was supported by National Research Foundation of Korea (2009-0073733). (2009-0073733, 2011-0016068)

Key Words: 저칼륨혈증, 암모니아, 집합관
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