

Localization of the Ammonia Transporter, Rhcg, in Intercalated Cell Subtypes of Human Kidney

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A novel ammonia transporter family member, RhCG, is expressed in the apical domain of type A and non A-non B intercalated cells in the mouse and rat kidney. However, the expression and distribution of the RhCG has not been established in the human. The purpose of this study was to determine the localization of RhCG in intercalated cells subtypes in the human kidney. For immunolocalization of RhCG, sections were obtained from healthy parts of cancer nephrectomized human kidneys. Intercalated cell subtypes were identified using antibodies against H⁺-ATPase and pendrin, and connecting tubule cells and principal cells of the collecting were identified using antibodies against calbindin-D28K and AQP2. Similar to mouse and rat, RhCG immunoreactivity was observed in the distal convoluted tubule (DCT), connecting segment (CNT), and throughout the collecting duct. However, in the human kidney, intracellular localization of the RhCG was predominantly basolateral and apical immunoreactivity was less intense. Colocalization with calbindin-D28K, AQP2, H⁺-ATPase and pendrin showed that DCT and CNT cells, type A and non A-non B intercalated cells express RhCG, and that type B intercalated cells and principal cells do not. These results suggest that RhCG may contribute to both apical and basolateral membrane ammonia transport in the human kidney.