Localization of the extracellular Ca2+-sensing receptor and PTH/PTHrP receptor in rat kidney.

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Abstract

Localization of the extracellular Ca2+-sensing receptor and PTH/PTHrP receptor in rat kidney. Am. J. Physiol. 271 (Renal FZuid Electrolyte Physiol. 40): F951-F956, 1996.- Using a strategy based on homology to the bovine parathyroid Ca2+-sensing receptor previously identified by us (5), we have recently isolated an extracellular, G protein-coupled Ca2+/ polyvalent cation-sensing receptor, RaKCaR (22), from rat kidney. The localization and physiological role(s) of this receptor in the kidney are not well understood. In the present study, we assessed the distribution of mRNAs for RaKCaR and the parathyroid hormone/parathyroid hormone-related protein (PTH/PTHrP) receptor along the rat nephron by in situ hybridization and reverse transcriptase-polymerase chain reaction of microdissected nephron segments. Our results show that transcripts for both receptors coexpress at glomeruli, proximal convoluted tubule, proximal straight tubule, cortical thick ascending limb, distal convoluted tubule, and cortical collecting duct. In addition, RaKCaR (but not PTH/PTHrP receptor) transcripts were found in the medullary thick ascending limb and outer medullary and inner medullary collecting ducts. These findings raise the possibility of roles for RaKCaR not only in the regulation of divalent mineral reabsorption but also in water reabsorption and urinary concentration. Taken together, our results provide new insights in understanding the effects of hypercalcemia on hormone-stimulated salt and water transport.