

Expression of the Ammonium Transporter Proteins RhBG and RhCG in Developing Rat Kidney

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Two nonerythroid homologs of the blood group Rh proteins, RhBG and RhCG, which share homologies with specific ammonia transporters in primitive organisms and plants, have been recently identified in the mouse and rat kidney. The purpose of this study was to establish the expression and localization of RhBG and RhCG during kidney development.

Rat kidneys from 18 (E18)-, and 20-day-old (E20) fetuses and 1 (P1)-, 4 (P4)-, 7 (P7)-, 14 (P14)-, and 21-day-old (P21) pups were processed for light microscope immunohistochemistry. RhCG immunoreactivity was observed in some renal epithelial cells, predominantly in the apical plasma membrane, from E18. At P1, RhCG immunoreactivity was observed in the whole kidney region including the cortex, outer medulla, and inner medulla. The RhCG labeling disappeared in the inner medulla from P3 and remained mainly in the cortex and outer medulla from P7 to P21. In contrast, RhBG immunoreactivity was not observed in fetal kidneys but observed in some renal epithelial cells, predominantly in the basolateral plasma membrane, from P1. Unlike RhCG, RhBG labeling was not observed in the inner medulla during the entire period of kidney development. These findings suggest that the expression of RhBG and RhCG may be regulated by different mechanisms and RhCG may play a more critical role in the ammonia metabolism during kidney development.