

STRONG CHILDREN'S RESEARCH CENTER

Summer 2015 Research Scholar

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ABSTRACT

Title: Maternal acidosis down-regulates beta-intercalated cell differentiation in progeny

Background: In the kidney cortical collecting duct (CCD), adjustments of acid-base balance are mediated by two types of intercalated cells (IC's): α -IC's and β -IC's. α -IC's secrete protons via a basolateral AE1 exchanger and apical H⁺ATPase (H⁺), while β -IC's secrete bicarbonate (HCO₃⁻) primarily via the apical pendrin exchanger. IC differentiation is primarily regulated by the acid-base status during pregnancy.

Objective: To determine whether maternal acid/base status influences intercalated cell differentiation in progeny.

Design/Methods: A pregnant rabbit's typical alkaline ash diet was modified by acid-loading with ammonium chloride during the fourth and final week of gestation. Kidneys were harvested from rabbits in the corresponding litter at 1 week (3 kits) and 3 weeks (2 kits). Tissues were then paraffin-embedded, sectioned onto slides at 4-6 μ m thickness, and IC subtypes were identified by