THE ROLES OF AMYLIN IN THE PERIPHERY

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The primary site of amylin biosynthesis lies in the pancreatic islet β -cells, but secondary sites are found in the gastrointestinal tract, dorsal root ganglia, and in the developing kidney where expression appears tightly controlled. The known actions of amylin as a hormone are equally diverse with physiological effects in the CNS in terms of satiety and memory, and in the PNS in gastric emptying and nociception. Furthermore in the periphery amylin has important functions in proximal tubules of the kidney where as a hormone it stimulates sodium/water resorption[1] and is potent as a proliferation factor both during development[2] and regeneration of adult cells[1]. To explain its renal actions amylin binding sites have been identified on the proximal tubules, as well as possible intracellular structures, amylin immunoreactive vesicles. These binding sites on proximal tubules are distinct from the expression of calcitonin receptors and RAMP 3 that have been defined by immunohistochemical staining on other tubules. The actions of amylin in the renal cortex are thought to be important in the maintenance of the polarity of proximal epithelial cells. These functions are considered important in the pathogenesis of hypertension[3] and may be linked to renal complications associated with diabetes. Furthermore in the pancreatic islets amylin may play a role in islet enlargement, an important issue in the progression towards overt diabetes. Recent studies by our group with the amylin gene-deletion mouse model provide further evidence for these roles of amylin in renal development and islet enlargement.

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