KEY

University of Minnesota

School of Nursing

N4301 Patient-Centered Care of Adults and Older Adults II

Hormones that Assist the Kidney to Regulate Fluid and Electrolytes

Hormone	Where is the hormone produced/stored?	When is the hormone released? (Major stimulus)	What is the action of the hormone?	What are the results of the hormone's release?
Renin	Produced by the Juxtaglomerular cells in the kidney.	Released when blood flow to the glomerulus drops.	Converts Angiotensinogen into Angiotensin II which results in arterial vasoconstriction. Angiotensin II and stimulates the adrenal cortex to produce aldosterone.	Blood pressure is increased. Blood flow to the kidneys is increased. Also see 'results' under aldosterone.
Aldosterone	Produced by the adrenal cortex.	The presence of plasma Angiotensin II. Hyperkalemia ACTH (minor stimulus)	Promotes the reabsorption of sodium ions (and thus water). Promotes the excretion of potassium. Mild vasoconstriction	Urine output is decreased. Circulatory blood volume is increased. Serum potassium levels fall.
Antidiuretic hormone (ADH)	Produced by hypothalamus and stored in the posterior lobe of the pituitary gland.	Released when serum osmolality is high (Serum sodium is high).	Binds to receptors on cells in the collecting ducts of the kidney and promotes reabsorption of water back into the circulation.	Urine output is decreased. Circulatory blood volume is increased. Serum osmolality decreases (serum sodium levels decrease).

Atrial natriutetic peptide (ANP)	Released by the cardiac cells in the atria.	Released when atrial cells are stretched due to increased blood volume.	Increases glomerular filtration rate (GFR). Decreases the reabsoprtion of sodium ions in the tubules. Inhibits the secretion of renin. Causes vasodilation.	Promotes the excretion of sodium and water. Circulating blood volume is decreased. Decreases BP.