Angiotensin II Effects

Angiotensin II is a hormone synthesized in pulmonary capillary endothelium by angiotensin-converting enzyme, which converts angiotensin I into angiotensin II. Angiotensin II increases systemic vascular resistance by increasing vascular smooth muscle contraction, raises blood pressure, constricts the efferent arteriole, and increases GFR. This hormone also increases sodium and water reabsorption in the proximal convoluted tubule, increases secretion of aldosterone from the adrenal cortex, increases secretion of ADH from the posterior pituitary, and promotes thirst by acting on the hypothalamus. All of these effects serve to maintain mean arterial pressure.



PLAY PICMONIC

Effects On Vasculature

Increases Vascular Smooth Muscle Contraction

Up-arrow Vessel and Smoothie-muscle with Flexing-arm

Angiotensin II increases vascular smooth muscle contraction and raises systemic vascular resistance. These effects take place by activation of angiotensin II receptor type I.

Increases Blood Pressure

Hiker-BP

Angiotensin II causes widespread vasoconstriction, promotes reabsorption of Na, and increases ADH release. All of these effects together increase blood pressure.

Effects on Kidney

Efferent Arteriole Vasoconstriction

E-fairy Artery Constrictor-snake

Angiotensin II is a potent vasoconstrictor that preferentially constricts efferent arterioles.This increases GFR even in the cases of decreased renal blood flow (e.g., hypotension).

Increases GFR

Up-arrow Gopher

Even though angiotensin II constricts the afferent arteriole, resulting in decreased renal blood flow, the preferential constriction of the efferent arteriole increases glomerular filtration rate (GFR).

Proximal Tubule

P-Rocks Tube

Angiotensin II increases the reabsorption of sodium and water in the proximal convoluted tubule by activating Na/H exchanger.

Sodium and Water Reabsorption

Salt-shaker Sponges Absorbing Water

Activation of Na/H exchanger in the proximal tubule results in sodium reabsorption. This creates a sodium concentration gradient that promotes water reabsorption.

Adrenal Cortex

Adrenal Cortez

Angiotensin II also acts on the adrenal cortex, where it promotes the synthesis and release of aldosterone.

Sign up for FREE at picmonic.com

Increases Aldosterone Secretion

Up-arrow Aldo-stereo

Angiotensin II promotes the synthesis and release of aldosterone from the adrenal cortex, which increases reabsorption of sodium and water and secretion of potassium by acting on principal cells of collecting duct. Aldosterone also promotes excretion of hydrogen ions by acting on alpha intercalated cells in late distal convoluted tubule and collecting duct.

Effects on CNS

Stimulates Posterior Pituitary Gland to Secrete Vasopressin (ADH)

Post Pit-bull releases Vases-presents

Angiotensin promotes the release of antidiuretic hormone (ADH) from the posterior pituitary. ADH promotes water reabsorption by increasing aquaporin expression in principal cells of collecting duct.

Stimulates Thirst in Hypothalamus

Hippo-Thor Thirsty in Water-mirage

Angiotensin II also has effects on the hypothalamus. It amplifies the sensation of thirst resulting in increased water intake.

Sign up for FREE at picmonic.com