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Commentary

A Brief Note on Vasopressin

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DESCRIPTION

Vasopressin, also known as Antidiuretic Hormone (ADH), Arginine Vasopressin (AVP), or Argipressin, is a hormone produced by neurons in the brain as a peptide prohormone, which is then converted to AVP. In reaction to extracellular fluid hypertonicity, it travels down the axon, terminating in the posterior pituitary, and is released from vesicles into the blood (hyperosmolality).

To begin with, it increases the amount of solute-free water reabsorbed back into circulation from the filtrate in the nephron tubules. Second, AVP constricts arterioles, raising arterial blood pressure and increasing peripheral vascular resistance. Vasopressin is a hormone that controls the tonicity of body fluids. It is released by the posterior pituitary in reaction to hypertonicity, and it induces the kidneys to reabsorb solute-free water and return it to the circulation through the tubules of the nephron, bringing the body fluid tonicity back to normal. Concentrated urine and lower urine volume are an unintended result of this renal resorption of water.

AVP produced in high amounts can cause moderate vasoconstriction, which can elevate blood pressure. AVP may also have a number of neurological side effects. It may have an impact on vole pair bonding. Prairie vole ventral forebrain areas with high-density distributions of vasopressin receptor AVPr1a have been demonstrated to promote and coordinate reward circuits during partner preference establishment. Antidiuresis is achieved by increasing the water permeability of the kidneys and Distal Convoluted Tubules (DCT), as well as the Outer and Inner Medullary Collecting Ducts (OMCD and IMCD), allowing water reabsorption and the excretion of more concentrated urine. Water channels (Aquaporin-2) are inserted into the apical membrane of collecting tubule and collecting duct epithelial cells as a result of enhanced transcription and insertion. Aquaporins allow water to pass over their osmotic gradient and out of the nephron, increasing the quantity of water reabsorbed back into the circulation from the filtrate.

Vasopressin promotes transcription of the aquaporin-2 gene *via* cAMP, resulting in an increase in the total amount of aquaporin-2 molecules in collecting duct cells. Increasing the permeability of the inner medullary collecting duct to urea by regulating the cell surface expression of urea transporters, which facilitates its reabsorption into the medullary interstitium as it travels down the concentration gradient created by removing water from the connecting tubule, cortical collecting duct, and outer medullary collecting duct. Vasopressin is a drug that is used to treat diabetes insipid us caused by low antiduretic hormone levels.

Vasopressin is used in the treatment of vasodilatory shock, gastrointestinal bleeding, ventricular tachycardia, and ventricular fibrillation, among other things. It asopressin agonists are used to treat a variety of illnesses, and the long-acting synthetic analogue desmopressin is used to treat low vasopressin secretion, as well as bleeding control and extreme cases of child bedwetting. In some cases, terlipressin and similar analogues are utilized as vasoconstrictors. This contributes to counter current multiplication, which helps with adequate water reabsorption in the distal tubule and collecting duct later on.

Vasopressin is injected into the body *via* an intravenous device, intramuscular injection, or subcutaneous injection. The action lasts anywhere from thirty minutes to two hours, depending on the mode of administration. It has a ten to twenty minute half-life. It is found in the extracellular fluid and is broadly disseminated throughout the body. The liver breaks it down and excretes it through the kidneys. Arginin vasopressins for septic shock are only to be used intravenously.

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