Arginine Vasopressin

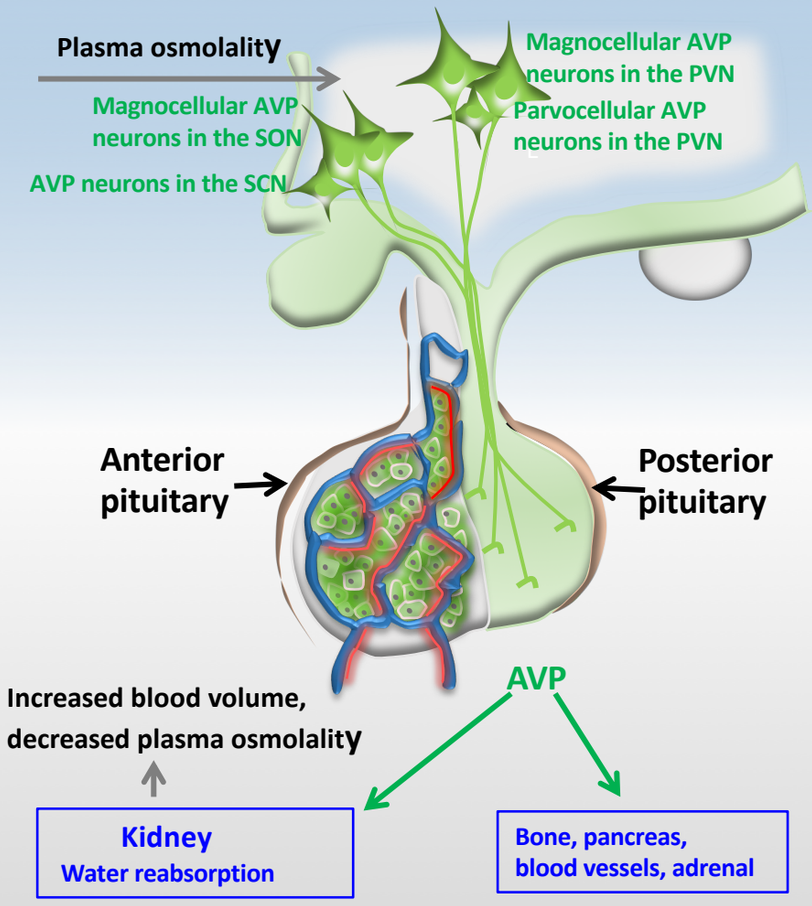
Hypothalamus and Neurohypophysis

Arginine vasopressin (AVP) is synthesized by magnocellular neurons in the supraoptic (SON) and paraventricular nuclei (PVN) of the hypothalamus and transported by axons to the posterior pituitary or neurohypophysis. AVP release from the posterior lobe into the systemic circulation is regulated primarily by plasma osmolality. Parvocellular AVP neurons from the PVN, which co-express corticotrophin releasing factor (CRF) secrete the two neuropeptides into the hypophysial portal circulation to target the corticotrophs of the anterior pituitary. AVP neurons in the suprachiasmatic nucleus (SCN) transmit circadian signals within the hypothalamus. Additionally, non-hypothalamic AVP neurons contribute to a complex network of AVP fibers in several brain regions that play roles in regulation of autonomic functions, water balance, sodium intake, and social behaviors.

↓ AVP

Target Tissues

Circulating AVP acts on type 2 vasopressin receptors (V2R) to regulate the permeability of a part of the renal tubule known as the collecting duct where water reabsorption occurs, thereby contributing to the control of plasma osmolality and blood volume. Two other vasopressin receptors, V1aR and V1bR, are widely expressed in peripheral tissues (blood vessels, bone, liver, pancreas, adrenal) and brain. In some cases, the physiological significance of signaling at peripheral receptors other than renal V2R remains to be established, although signaling by AVP in the pituitary is known to be mediated via V1aR.



Vasopressin (AVP) or antidiuretic hormone (ADH) governs water reabsorption by the kidney, and modulates the HPA axis. In addition, roles for AVP in regulating circadian rhythms, sodium balance, autonomic functions and social behaviors such as pair bonding are also in the process of being elucidated.

Dr. Breckenridge has years of experience conducting standard toxicity studies in rodents, dogs and non-human primates where electrolyte balance and the effects of xenobiotics on kidney function is commonly assessed.

Drs. Cooper and Handa understand the control of circadian rhythms and Dr. Engler-Chiurazzi, an associate of QS^3, is an expert in the assessment of behavior in animal models.

Let QS^3 scientists assist you in determining whether changes in vasopressin may underlie the effects you have observed in standard toxicity study on kidney function, circadian rhythms or social behaviors.