

Collecting Duct (OLD VERSION)

The collecting duct system is a set of tubules and ducts that lead from the nephron to the ureter for urine excretion. One function of the collecting ducts is the absorption of sodium using active transport, specifically sodium-potassium ATPase pumps. At the expense of ATP, sodium is pumped back in the principal cells of the collecting duct and potassium is pumped out. This process is regulated by aldosterone, which stimulates the synthesis of more pumps. Vasopressin also acts on these cells, increasing the water reabsorption by upregulating aquaporin channels, allowing osmosis to occur coupled with sodium reabsorption. Finally, the collecting duct concentrates urine by reabsorbing necessary salts and water, reducing the volume, and increasing the concentration of urine output.



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Characteristics

Na⁺ reabsorption via Active Transport

[Salt-shaker on ATP-conveyor-belt](#)

Sodium is reabsorbed into the kidney tissue by active transport. This occurs in the principal cells. There are sodium-potassium ATPase pumps that couple sodium reabsorption and potassium secretion into this tubule at the expense of ATP.

Vasopressin causes Water reabsorption

[Vase-presents pressing Water onto Sponge](#)

Vasopressin, also called ADH, or antidiuretic hormone, affects the expression of aquaporin channels on the surface of principal cells, which control the amount of water reabsorbed osmotically.

Concentrates Filtrate

[Concentrated-drop dripping into Filter-jar](#)

The collecting duct helps concentrate urine by reabsorbing important electrolytes and water, thus concentrating the urine as it goes to the ureter.