Proximal Tubule

The Proximal Tubule is located after Bowman's capsule and is the first site of absorption in the nephron. Sodium is absorbed into the renal cortex tissue through active transport, which involves using ATP to remove sodium from the filtrate. Water absorption also occurs here because of the sodium concentration gradient. Additionally, glucose, amino acids, and other organic materials are reabsorbed in the proximal tubule. The pH of the filtrate is regulated by exchanging bicarbonate for protons, and excreting excess protons allows for regulation of blood pH as well. The proximal tubule is also the site where drugs and toxins are excreted into the filtrate, which is eventually excreted as urine. At this point, the filtrate has the same osmolarity as plasma. The filtrate leaves the proximal tubule and enters the loop of Henle.



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Characteristics

Na+ Reabsorbed Via Active Transport
Salt-shakers on ATP conveyor-belt
Sodium is absorbed into the renal cortex tissue through active transport, which involves using ATP to remove sodium from the filtrate.

Water Follows Na+
Water-bottle Follows Salt-shaker
Water absorption also occurs here because of the sodium concentration gradient.

Most Of Glucose Reabsorbed
Glue Leaving the tube when Reabsorbed
Glucose is reabsorbed here through cotransport driven by the sodium gradient out of the nephron.

Most Of Amino Acids Reabsorbed
Amigo-lemons leaving tube
Amino acids and other organic materials are also absorbed through cotransport channels using the sodium gradient.

Bicarbonate Exchanged For H+
Bi-Car-Bomb swapping places with H+
Bicarbonate is reabsorbed into the renal tissue and protons are secreted into the filtrate. This helps with pH regulation of the blood and filtrate.

Drugs and Toxins Excreted
Drugs and Poison bottle Moved into tube
Most drugs and toxins are secreted in the proximal tubule of the kidney, which is why excessive use of medication can lead to kidney failure.

Filtrate Osmolarity Same As Plasma
Filter-Jar equal to weight of Plasma-TV on Ozzy-mole scale
The filtrate has the same osmolarity, substrate concentration, as blood plasma due to the reabsorption of substrates.

Leads To Loop Of Henle
Hen
The filtrate travels from the proximal tubule into the loop of Henle.

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