What Is the Excretory System?

Worksheet

The excretory system, centered on the kidneys, filters blood to remove waste products like urea, excess salts, and water, forming urine that is passed out via the ureters, bladder, and urethra.

Questions

1. Where does blood filtration first occur in the kidney?

A) Bladder
B) Glomerulus
C) Ureter
D) Urethra

2. What happens to glucose during normal kidney function?

A) It's excreted in urine
B) It's fully reabsorbed back into the blood
C) It stays in the glomerulus
D) It's destroyed

3. Which waste product is a major nitrogen-containing compound removed in urine?

A) Glucose
B) Urea
C) Oxygen
D) Sodium

4. What hormone increases water reabsorption when the body is dehydrated?

A) Insulin
B) Adrenaline
C) Antidiuretic hormone (ADH)
D) Growth hormone

5. An adult filters about 180 liters of plasma per day but only excretes about 1.5 liters of urine. What happened to the rest?

6. A person is dehydrated. How do the kidneys respond?

7. Someone eats a very salty meal. How do the kidneys restore balance?

8. Define: What is the main function of the excretory system?

9. Define: What is the functional unit of the kidney?

10. Define: What are the three main steps of urine formation?

Answer Key

1. B) Glomerulus - The glomerulus is the capillary network in the nephron where blood is first filtered.

2. B) It's fully reabsorbed back into the blood - In a healthy kidney, filtered glucose is completely reabsorbed in the tubule, so none appears in normal urine.

3. B) Urea - Urea, produced from excess amino acids in the liver, is a key nitrogenous waste filtered out by the kidneys.

4. C) Antidiuretic hormone (ADH) - ADH signals the kidney tubules to reabsorb more water, concentrating the urine and conserving body water.

5. 1) 180 L of filtrate is produced by filtration in the glomeruli each day 2) About 99% of that filtrate - roughly 178.5 L - is reabsorbed back into the blood in the tubules (water, glucose, salts) 3) Only about 1% remains as waste-concentrated fluid 4) That remaining ~1.5 L becomes urine and is excreted.

6. 1) Blood volume and water content drop, blood becomes more concentrated 2) The pituitary gland releases more antidiuretic hormone (ADH) 3) ADH makes the kidney tubules and collecting ducts reabsorb more water back into the blood 4) Less water is lost as urine, and the urine produced becomes darker and more concentrated.

7. 1) Blood salt (sodium) concentration rises above normal 2) The kidneys detect the excess sodium in the filtrate 3) Less sodium is reabsorbed in the tubules, so more stays in the filtrate 4) The extra sodium is excreted in the urine along with extra water, restoring normal blood salt levels.

8. To remove metabolic waste, excess water, and salts from the blood, maintaining internal balance.

9. The nephron - about a million per kidney, each filtering blood and forming urine.

10. Filtration (in the glomerulus), reabsorption, and secretion (in the tubules).