Life Processes

Human Excretory System

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Excretion is the process where all the metabolic wastes are removed from the body. Excretion in humans is carried through different body parts and internal organs in a series of processes. Diffusion is the most common process of excretion in lower organisms. A human body is an exceptional machine, where different life-processes (respiration, circulation, digestion, etc.) take place simultaneously. As a result, many waste products produced in our body are in various forms that include carbon dioxide, water, and nitrogenous products like urea, ammonia, and uric acid.

In addition to these, the chemicals and other toxic compounds from medications and hormonal products are also produced. Simple diffusion is not sufficient to eliminate these wastes from our body. We need more complex and specific processes in order to eliminate waste products.

Blood contains both useful and harmful substances. Hence, we have kidneys which separate useful substances by reabsorption and toxic substances by producing urine.

Kidney has a structural filtration unit called nephron where the blood is filtered. Each kidney contains a million nephrons.

Capillaries of kidneys filter the blood and the essential substances like glucose, amino acids, salts, and the required amount of water get reabsorbed and the blood goes into circulation.

Excess water and nitrogenous waste in humans are converted to urine. Urine thus produced is passed to the urinary bladder via the ureters. The urinary bladder is under the control of the Central Nervous System. The brain signals the urinary bladder to contract and through the urinary opening called the urethra, we excrete the urine.

The human excretory system organs include:

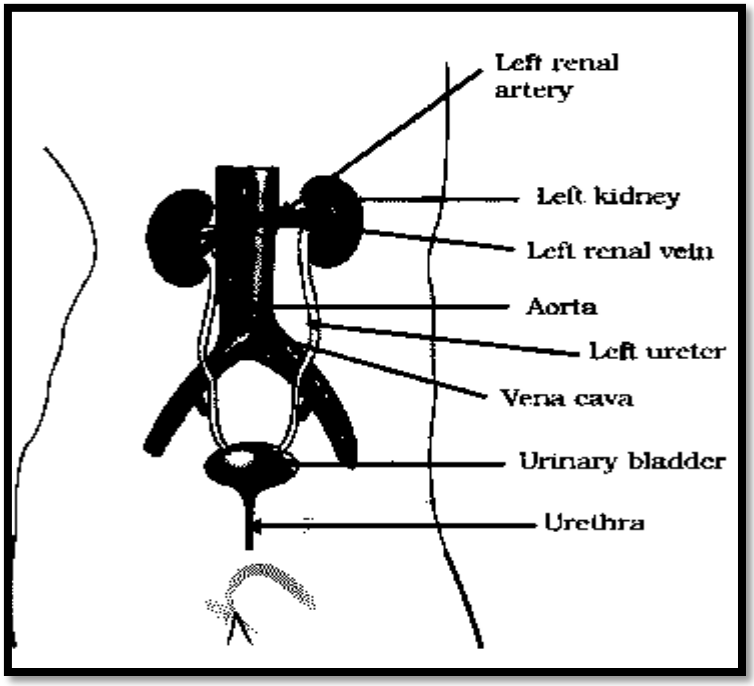
- ✓ A pair of kidneys
- ✓ A pair of ureters
- ✓ A urinary bladder
- ✓ A urethra

The excretory system of human

Includes a pair of kidneys, a pair of ureters, a urinary bladder and a urethra. Kidneys are located in the abdomen, one on either side of the backbone.

Urine produced in the kidneys passes through the ureters into the urinary bladder where it is stored until it is released through the urethra.

How is urine produced? The purpose of making urine is to filter out waste products from the blood. Just as CO_2 is removed from the blood in the lungs, nitrogenous waste such as urea or uric acid are removed from blood in the kidneys. It is then no surprise that the basic filtration unit in the kidneys,



like in the lungs, is a cluster of very thin-walled blood capillaries. Each capillary cluster in the kidney is associated with the cup-shaped end of a coiled tube called Bowman's capsule that collects. Each kidney has large numbers of these filtration units called nephrons packed close together. Some substances in the initial filtrate, such as glucose, amino acids, salts and a major amount of water, are selectively re-absorbed as the urine flows along the tube. The amount of water re-absorbed depends on how much excess water there is in the body, and on how much of dissolved waste there is to be excreted. The urine forming in each kidney eventually enters a long tube, the ureter, which connects the kidneys with the urinary bladder. Urine is stored in the urinary bladder until the pressure of the expanded bladder leads to the urge to pass it out through the urethra. The bladder is muscular, so it is under nervous control, as we have discussed elsewhere. As a result, we can usually control the urge to urinate.