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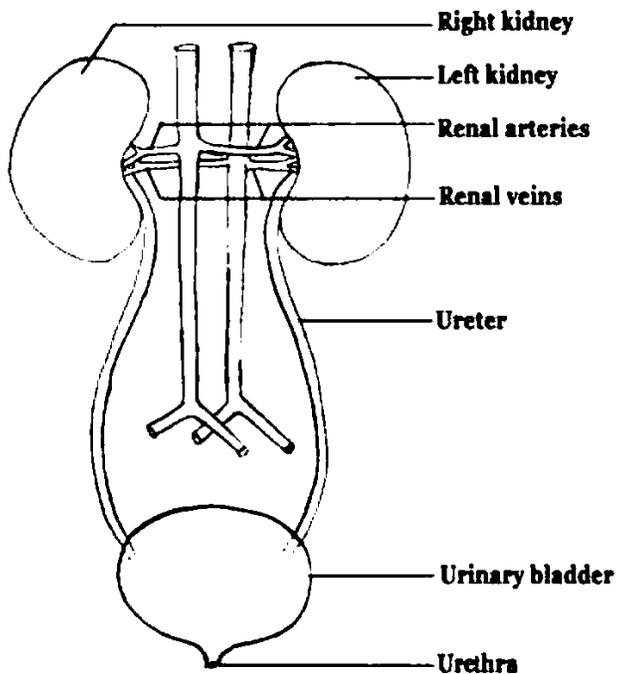
The biological process involved in the removal of harmful metabolic wastes from the body is called excretion.

Many unicellular organisms remove these wastes by **simple diffusion** from the **body surface** into the surrounding water.

Excretion in Human Beings

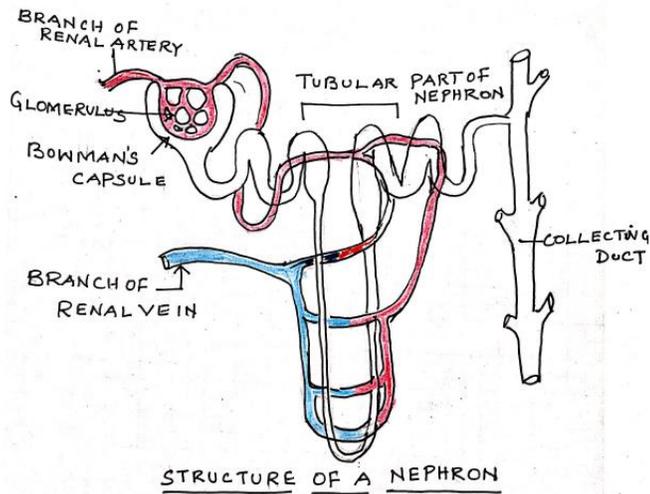
Excretory/urinary system consists of :

- (1) The kidneys : The excretory organ
- (2) The ureters : The ducts which drain out urine from the kidneys
- (3) The urinary bladder : The urinary reservoir
- (4) The urethra : The channel to the exterior



Formation of Urine

- Each kidney contains many filtration units called as nephrons.
- Nephrons are made up of a cluster of thin walled capillaries called glomerulus which is associated with a cup like structure called as Bowman's capsule and the long tube which terminates through this capsule.
- The renal artery brings oxygenated blood to the kidneys along with the nitrogenous wastes like urea and uric acid and many other substances.
- The blood gets filtered through the glomerulus and this filtrate enters the tubular part of nephron.
- As this filtrate moves down the tubular part, glucose, amino acids, salts and excess of water gets selectively reabsorbed by the blood vessels surrounding these tubules.
- The amount of water reabsorbed depends upon :
 - * How much excess of water is there in the body and,
 - * How much nitrogenous wastes need to be excreted out.
- So the fluid now flowing in the tubular part is urine which gets collected in collecting ducts of nephrons.
- These collecting ducts together leave the kidney at a common point by forming the ureter.



The urine formation involves three steps :

- 1. Glomerular filtration :** Nitrogenous wastes, glucose water, amino acid filter from the blood into Bowman Capsule of the nephron.
- 2. Tubular reabsorption :** Now, useful substances from the filtrate are reabsorbed back by capillaries surrounding the nephron.
- 3. Secretion :** Urea, extra water and salts are secreted into the tubule which open up into the collecting duct & then into the ureter.

Artificial Kidney

Haemodialysis : The process of purifying blood by an artificial kidney. It is meant for kidney failure patients.

Excretion in Plants

Plants use different strategies for excretion of different products :

- Oxygen and carbon dioxide is diffused through stomata.
- Excess water is removed by transpiration.
- Plants can even lose some of their old parts like old leaves and bark of tree.
- Other waste products like raisins and gums especially in old xylem cells which can also be lost by plants.
- Plants also secrete some waste substances into the soil around them.