

DIII / 5th paper / Gr. C

EXCRETION / URINE FORMATION IN MAMMALS

Excretion is the separation of metabolic wastes inside the body, then their elimination to outside of body. During elimination certain useful substances are reabsorbed.

Metanephric kidneys are excretory organs of mammals. They are located on either side of the vertebral column. The two kidneys are asymmetrical in position. The right kidney is slightly lower than the left.

The functional unit of kidney is nephron or uriniferous tubule. Each kidney of man forms of one million of nephrons. Each nephron is a coiled tube having a length of 3 cm.

STRUCTURE OF NEPHRONS:

A nephron is a twisted tubule, closed at one end and open at other end. One end of nephron is formed of cup shaped Bowman's capsule. It is double walled. The space between two walls called capsular space. The cavity of the cup contains a network of capillaries called glomerulus.

The glomerulus receives blood from afferent vessels and comes out from glomerulus through efferent vessels. The Bowman's capsule together with glomerulus are called Malpighian corpuscles.

The Bowman's capsule leads into many coils called proximal convoluted tubule (PCT). The PCT leads into 'U' shaped Henle's loop. It has three regions, a proximal descending limb, a middle thin segment and descending ascending limb. The ascending limb leads into another coil portion called distal convoluted tubule (DCT). It opens into collecting tubule or collecting duct.

The collecting duct receive several nephron.
 The collecting ducts open into pyramids.

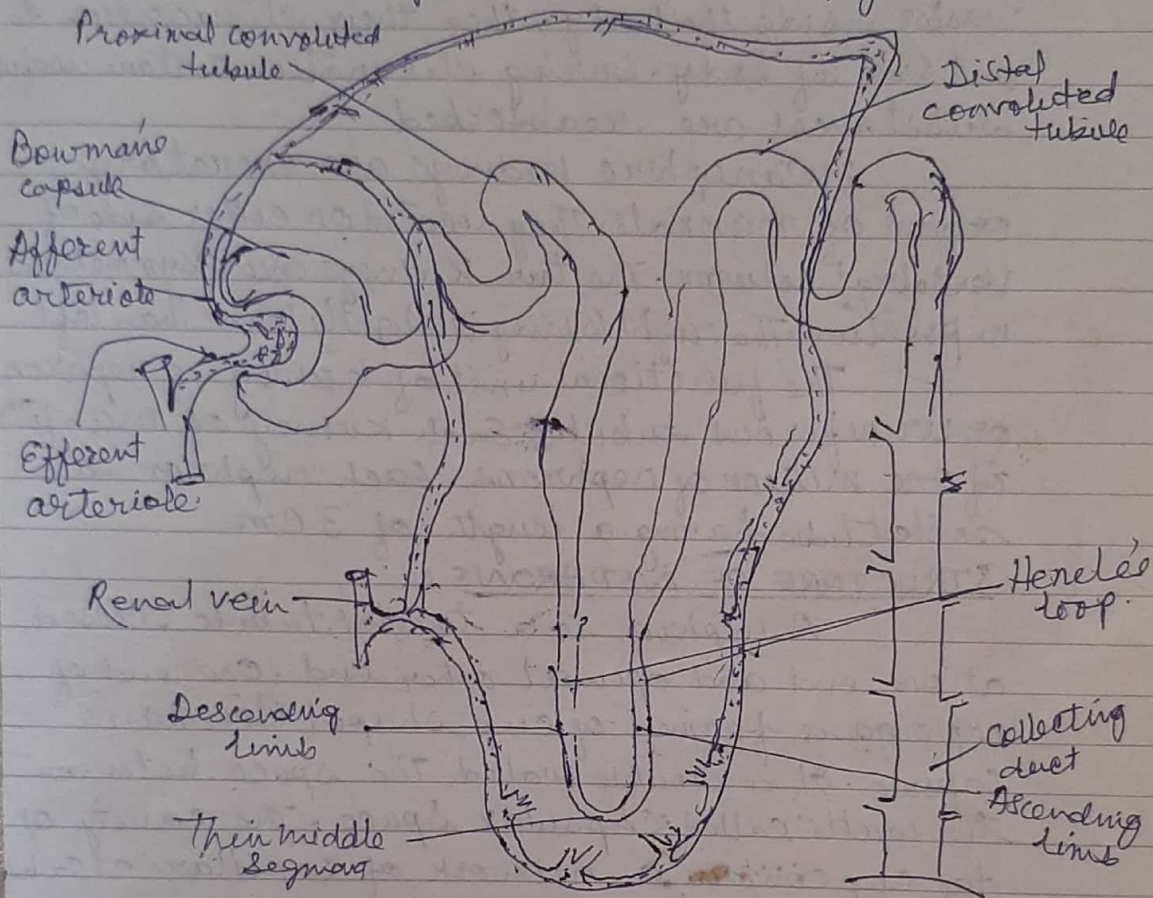


Fig - A Nephron of mammal.

URINE FORMATION:

Urine is the excretory ^{fluid} products eliminated by the kidney. Formation of urine is a highly complex and sensitive process. It involves three steps. They are

1. Ultrafiltration or glomerular filtration.
2. Selective reabsorption.
3. Tubular Secretion (Augmentation).

1. Ultrafiltration:

The straining of blood by Malpighian corpuscle is called ultrafiltration. It is the first