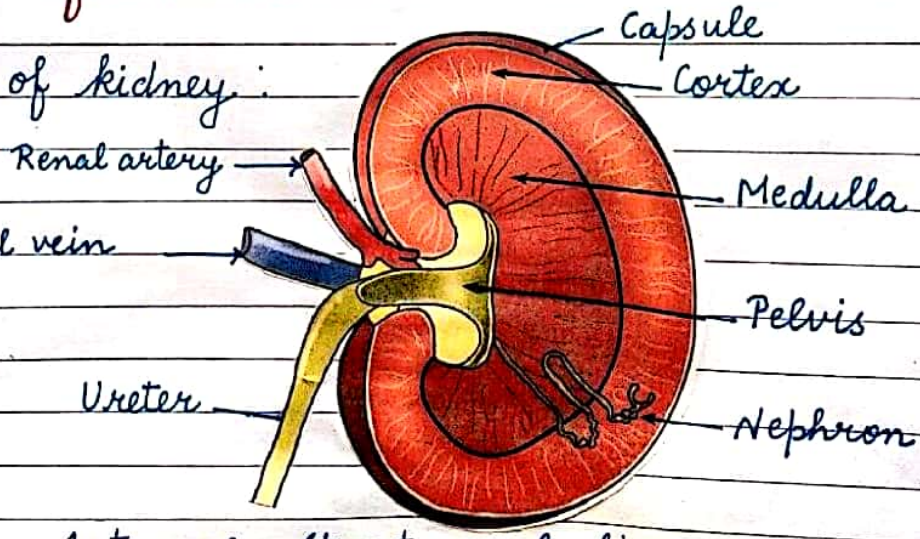
TENDER HEART HIGH SCHOOL, SEC-33B, CHD.

Class - VII Subject - Biology
Chapter - 5 Excretion in Humans.
Teacher : Ms. Nidhi

Good Morning Children! This lesson is of Class-VII for the subject of Biology, Chapter-5, Excretion in Humans of your textbook Concise Biology, Selina Publications. It is being submitted to you on 11.11.2024

In the last lesson we have discussed the human excretory system and the various substances that has to be excreted from our body. Today we are going to discuss the Structure of Kidney and the role of kidneys in urine formation.

Structure of kidney:



Internal Structure of kidney.

Internally, each kidney is composed of an outer darker region called cortex and an inner lighter region called medulla. A wide, funnel-shaped cavity is present at the concave side of both the kidneys called renal pelvis where the medulla drains the

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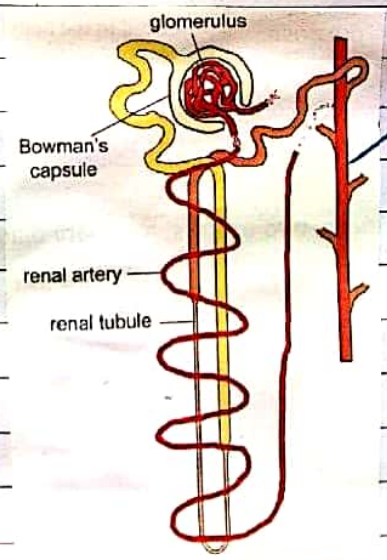
the urine. The ureters originate from here.

The function of the kidneys is to filter the blood and remove nitrogenous wastes such as urea and uric acid. It also removes excess water, soluble salts like sodium and other dissolved wastes in the form of urine from the body.

The structural and the functional unit of kidney is **Nephron**.

An artery called the renal artery brings in the blood containing wastes into the kidneys. Each kidney contains about a million microscopic filtering units called the nephrons. Nephrons are the sites where blood is filtered and the wastes are removed. Reabsorption of water and required salts takes place within the nephrons.

Each nephron starts as a cup-like Bowman's capsule which continues behind as a narrow tubule. The tubule is convoluted having three parts - Proximal convoluted tubule, Loop of Henle and Distal convoluted tubule and opens into collecting duct



Structure of nephron.

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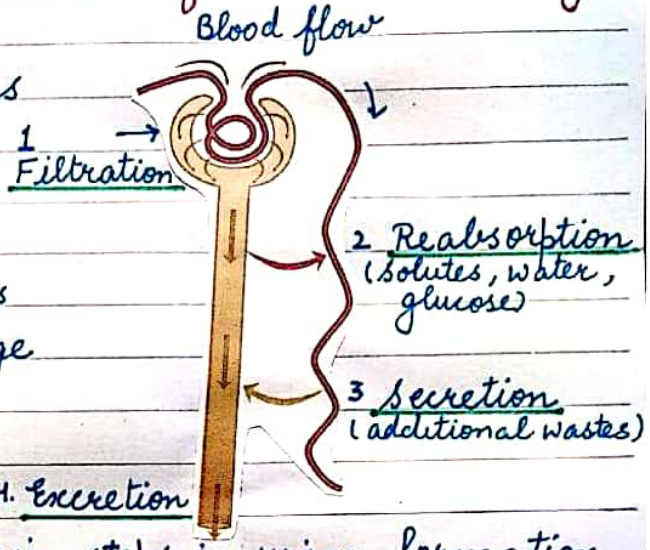
Now let us see how urine is formed in kidneys.

Step-1. Filtration

It occurs in the glomerulus where water and solutes are filtered out of the blood. The filtrate then moves into the Bowman's capsule. It consists of large amount of water, glucose, sodium and potassium ions, vitamins and harmful substances like urea and uric acid.



Basic steps in urine formation.

Step-2. Reabsorption

As the filtrate moves towards the urinary tubule approximately 99% water, all the glucose and most of the sodium and chloride ions are reabsorbed by the renal capillaries.

Step-3. Secretion.

The nephrons remove the waste substances such as excess water, mineral salts and urea from the blood and convert it into urine.

Step-4. Excretion

The urine that is formed in the kidneys is sent to the ureters for its further collection in the urinary bladder. When the bladder is full, the urine is expelled to the outside through the urethra.

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The process of expulsion of the urine to the outside is called urination

The normal human urine mainly consists of water, urea, uric acid and some amount of mineral salts.

With this topic I am ending today's lesson. Kindly go through the topic atleast twice to understand it well. Also draw the diagram of 'Kidney' and 'Structure of Nephron' in your notebooks.

Thankyou Children!