TENDER HEART HIGH SCHOOL, SEC-33B, CHD

05.08.2024

Class X

SUBJECT - Biology

Chapter 9

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Chapter 9 Excretory System

Good morning students

This lesson is of class 10 for the subject of Biology which is covered in Chapter 9 titled Excretory System starting on Page No 113 of your text books titled Concise Biology - Selina Publications and is being submitted to you on 05.08.2024

This voice is of Nidhi Rana.

Before discussing the excretory system let us first understand what excretion is?

Excretion The process of removal of toxic and unwanted wastes from the body is called excretion Organs concerned with the formation storage and eliminations of nitrogenous wastes (ie urine) from the body constitute excretory organs. Thus in humans the excretory system is better termed as urinary system which involves the elimination of urine i.e. nitrogenous waste.

A number of biochemical reactions take place during the various metabolic activities going on within the body. During these biochemical reactions many useful substances as well as wastes are produced. If the waste substances are not removed, they may poison the cells.

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The waste products in animal include -

i CO_2 and Water All living cells liberate energy during respiration and give out CO_2 and water CO_2 is excreted through lungs. The excess quantity of water is also removed along with many harmful materials dissolved in it through sweat

ii Nitrogenous wastes Urea, Uric acid, and ammonia are the main nitrogenous metabolic wastes These are produced by the break down of extra amino acids in the liver The extra amino acids are broken down in liver to produce glucose and urea Urea needs to eliminated from the body as it is highly poisonous and can cause death Urea is excreted out through the kidneys.

iii Excess salt and vitamins Common salt and some excess water-soluble vitamins are excreted Salts are mainly given out by the kidneys.

iv Bile Pigment are the breakdown products of the haemoglobin of the dead RBCs Liver cells secrete them into the bile juice and pour into the duodenum These pigments give faeces their yellowish brown colour Some of such pigments are excreted in the urine.

The most poisonous of all waste by products of metabolism is ammonia. Liver immediately converts ammonia into a relatively harmless substance called Urea which is released into blood. Kidneys extract urea from blood and excrete

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it from the body as a part of a liquid called urine
Now let us talk about various excretory organs in human beings that help us to get rid of wastes:

i. Kidneys are primary excretory organs for eliminating nitrogenous waste (or urea) from the blood in the form of urine kidneys are part of a set of organs called the urinary system

ii Skin helps in excretion of urea, salts and excess water by means of sweat glands present in the skin.

iii Lungs help in excretion of CO_2 and water vapours produced during respiration

iv Liver helps in removing urea, bile pigments and toxins as it functions as detoxifying gland.

Now before going further it is the break time children Listen to the following questions carefully and answer these questions in your notebooks during the break. Questions are as follows.

Q1 Name the various nitrogenous wastes produced in the body.

Q2 Where is urea produced in the body?

Q3 Name the excretory organ that helps to eliminate nitrogenous wastes from the body.

You may pause the audio for 3 min now.
Break is over children. Listen to the correct answers.

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A1 Urea, Uric acid and ammonia are nitrogenous wastes produced in the body.

A2 Urea is produced in the liver.

A3 Kidneys help to eliminate nitrogenous waste.

Now let us resume the topic with discussion of

Excretory system of Humans.

Excretory system of Humans consists of the following organs.-

i. A pair of Kidneys
ii Ureters
iii Urinary bladder
iv Urethra

Students please see Fig 9.1 showing the human urinary system. You may all see the positioning of all the above mentioned organs in Fig 9.1. Also look at the placement of adrenal gland. In Fig 9.1 aorta is shown with red colour which gives out branches forming renal arteries entering each of the two kidneys. Similarly renal veins from both kidneys leave and join the vena cava shown in blue colour in Fig 9.1.

Excretory system has a pair of Kidneys

Kidneys are bean shaped, reddish brown, slightly brown flattened organs. They are located just above the waist on either side of the backbone protected by the last two ribs. The left kidney is located slightly above the right kidney. This is because on the right side we have the liver. and to accomodate this largest gland i.e. liver on the right side of body, the right kidney is

little lowered in position. From the notch or hilum of each kidney arises a tube called ureter and connects behind with the urinary bladder in the lower area of our abdomen. The front end of the ureter is somewhat expanded into the kidneys and is called the pelvis. The urine produced in kidneys constantly flows through the ureters and collects in the urinary bladder. The urine is intermittently emptied from the urinary bladder to the outside of the body through the urethra. A sphincter guards the opening of the bladder into the urethra and relaxes at the time of urination under the impulse from the brain

The act of urinating is also called Micturition

Children let us conclude our discussion here Next time we will discuss the structure of kidney. Now I will give you some home assignment questions which you all have to answer in your notebooks

Home assignment questions are as follows-

Q1 Draw a well labelled diagram of Human excretory system.

Q2 Name the various nitrogenous wastes produced in the body. Where is urea produced in the body?