TENDER HEART HIGH SCHOOL, SEC-33B, CHD

CLASS - IX BIOLOGY

TEACHER - Ms Nidhi Rang

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CHAPTER - 11 DIGESTIVE SYSTEM

This lesson is for Class 9 for the subject of Biology Topic - 'Role of Large intestine and Liver in digestion' which is covered in Chapter 11 titled Digestive System starting on Page No - 104 of your text book titled Concise Biology Selina Publications

Dear children Let us start with -

LARGE INTESTINE It is about 1-5 meters long

It has 3 parts -

(i) Caecum - small front blind pouch situated at the junction of small and large intestine. From its blind end projects a narrow worm shaped tube called vermiform appendix. Vermiform appendix is a vestigial organ (functionless) Sometimes it gets inflamed, due to some infection, it is called appendicitis

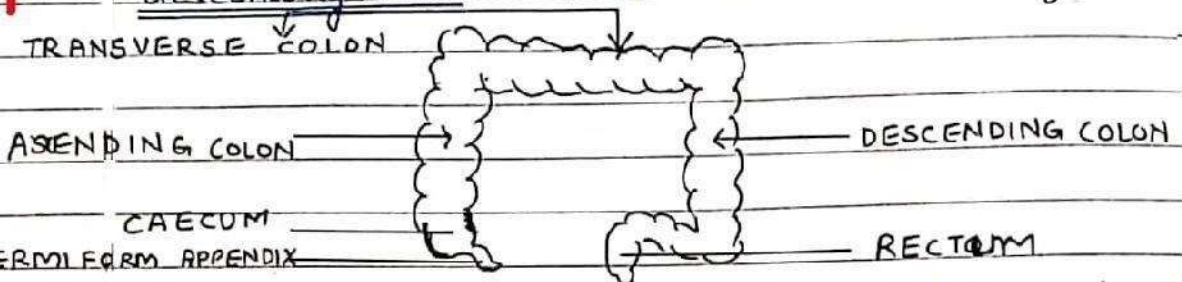
2. Colon - It is a little more than 1 meter long

Three regions of colon -

ascending colon - passes up the abdomen on the right

transverse colon - crosses to the left just below stomach

descending colon - moves down on the left side



3 Rectum - is last part of large intestine about 15 cm long which opens at the anus. Anus has circular muscles (sphincters) (which can contract and relax) to keep it closed except when passing bowels (waste) outside body

CLASS - IX BIOLOGY
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FUNCTION OF LARGE INTESTINE

1) It absorbs water and little digested food from the contents which mainly consist of undigested material

NOTE - Large intestine doesnot secrete any enzyme

Defaecation - Expulsion of undigested remains of food i.e. faeces from the alimentary canal.

Bad odour of faeces is due to bacterial action

ASSIMILATION OF FOOD

Assimilation is utilization of digested food i.e. conversion of digested food into body material

Once the food gets digested it is absorbed into blood vessel (proteins, carbohydrates) or (fats) into lacteals in the small intestine (villi)

(i) Carbohydrates - Excess carbohydrates absorbed into the villi gets into the blood vessel (hepatic portal vein) which carries it to the liver. In liver excess carbohydrates are converted into glycogen and thus excess glucose (simple sugar) is converted into glycogen (storage form). This process is called glycogenesis. The stored glycogen reconverts into glucose when the body requires it This process is called glycogenolysis

(ii) Proteins - Proteins are digested into amino acids. Excess amino acids ____ can not be stored in the body Excess amino acids are broken down in the liver by a process called deamination in which the nitrogen containing amino group is removed and reconverted into urea for excretion and remaining part forms glucose and is utilized.

(iii) Fatty acids and glycerol - produced as a result of break down of fats are absorbed into lacteals (Lymph vessels in villi) and are transported mainly through lymphatic system Excess fats can be deposited below the skin as 'subcutaneous fats' or fats can be deposited around vital internal organs (like kidney)

CLASS - IX BIOLOGY
TEACHER - Ms Nidhi Rana

Now before going further let us take a short break. Answer the following questions during break

Q1) Name the 3 parts of large intestine
Q2) Give the term - The process of breakdown of amino acids in the liver leading to formation of urea in the liver
Q3) State the function of Lacteals.

Write the answers to above questions in notebook. Break is over children. Listen to correct answers

A1) Caecum, Colon and Rectum
A2) Deamination
A3) Digested fats [i.e. fatty acids and glycerol is absorbed into lacteals.

Now let us resume the topic with discussion of —

LIVER is the largest gland of our body.
Location of Liver - It is located in the upper right side of abdomen just below the diaphragm. Functions of Liver -

(1) It controls the blood sugar level. Excess sugar in the blood can be converted to glucogen and stored in liver, and is released again when required by the body.
(2) Deamination process occurs in liver producing urea
(3) Liver detoxifies substances like drugs, alcohols etc.
(4) It helps in excrecretion of toxic poisonous substance
(5) It helps in synthesis of RBCs in embryo. and in adults destruction of dead RBCs occurs in Liver.

CLASS - IX BIOLOGY
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Experiments on Digestion:

(1) AIM - To study the action of saliva on starch. Prepare a suspension of starch by heating 1gm of starch in 100 ml of water in a beaker. Now divide this suspension into 3 test tubes.

1) Test tube 1 - (with starch suspension) Test it for presence of starch by using iodine solution. Starch test is positive.

2) Test tube 2 - (with starch suspension) Test it for the presence of sugar Sugar test is negative.

3) Test tube 3 - (with starch suspension) Add to it an equal amount of saliva from mouth. Hold it in hand for 15 mins to keep it warm Test it for starch and sugar both. Starch test is negative now. Sugar test is positive

The starch has been converted to sugars by the action of saliva.

2: Aim To study the action of pepsin on egg white (protein)

Stir egg white in 500 ml of water. Boil the mixture and filter it through glass wool Filterate will be a cloudy liquid (suspension) Divide the suspension in 4 test tubes as -

Test Tube A - Suspension + Pepsin
Test tube B - Suspension + HCl
Test tube C - Suspension + HCl + Pepsin
Test tube D - Suspension + HCl + boiled pepsin

Place all the test tubes in a beaker of water at about 35°C for nearly 10 minutes

→ Test tube A Pepsin can not work because pepsin can digest protein only when it is acidic.
→ Test tube B - No change ; without pepsin proteins can not be digested
→ Test tube C - cloudy suspension changes to clear solution indicating that proteins have been digested by pepsin (in acidic medium)
→ Test Tube D - No change as boiling destroys the protein's ..... enzyme i.e. pepsin Hence pepsin can not digest proteins

3. Aim To study the effect of alkalinity on enzyme action.

In the above experiment take a fifth test tube - E. as -

Test tube E - suspension + Pepsin + Sodium bicarbonate (alkaline)

Keep it at 35°C

No change ; Pepsin does not wort in alkaline medium

Practical work on food tests

Students may read and learn the various testing procedures adopted for testing - Glucose, Starch Proteins, Fats, Water and minerals, as given in your text book at Page No 113 and 114.

Dear students with this I am ending todays discussion. Kindly go through the given explanation and with reference to the detailed explanation you are required to answer the following home assignment questions -

HOME ASSIGNMENT

Q-1 Do the following 'Review questions' given at the back of Chapter 11 [Page No 115] of your text book

C. SHORT ANSWER TYPE

Q No 6, 7 and 8

D. LONG ANSWER TYPE

Q No 6 and 7