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Question no 1

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Digestive system

digestive system is made of digestive tract ,the gastrointestinal tract with in human which takes in food ,digest it absorb nutrient and absorb energy and secrete the waste in the form of feces

•Function of Digestive system

•**Ingesting** :take in the food into the alimentary canal

•**Propulsion**: mixes and moves the content along the alimentary canal

•Digestion

•**Mechanical**: breakdown of food the chewing process is known as mastication

•**Chemical**: digestion of food into small molecules by the help of enzymes

•**Absorption** :in this process foods digested substances passes through the walls of Some organs of alimentary canal into the blood for circulation

•**Elimination** :food substances cannot be digested or absorbed is decreased from the alimentary canal as feces the process is called demarcation

•Main Divisions Of the Digestive system

•Alimentary

Continuous muscular Digestive tube winding throughout the body

Digests and absorbs food particles

Contain the following organs :

- Mouth
- Pharynx
- Esophagus
- Stomach
- Small intestine
- Large intestine
- Rectum

•Accessory Digestive organs

•Contain the following organs

- Teeth
- Tongue
- Gallbladders
- Salivary glands
- Liver
- Pancreas

•Mouth

Mouth consists of the following

•Tongue

It is a muscular organ

Help in grind food into a bolus

Helps forms words and is a sensory organ for taste

•Salivary glands

Human have 3paired gland salivary gland

- Submandibular
- Parotid gland
- Sublingual gland

•Function

Produces and secretes saliva

Cleanses the mouth

Dissolved food chemicals so they can be tasted

Moistens food ,compacting it into a bolus

Begins the chemical breakdown of food

•Teeth

Teeth are used in chewing the food crushing and grinding

Breakdown food into smaller parts increasing surface area

For digestion

•Types of teeth

- Incisor (cutting)
- Canine (tearing)
- Molar (crushing)
- pre molar (grinding)

•Pharynx

Pharynx is the part of throat

Pharynx receive bolus from the mouth and swallow it

•Esophagus

Muscular tube they propels food to stomach bolus enters stomach through Esophagus

Esophageal gland produces mucus to lubricant bolus

It has two muscular sphincters

Esophageal sphincter to prevent back flow into oral cavity

Cardiac sphincter to prevent back flow into esophagus

Reduce gastric reflux

By means of a series of contraction called peristalsis the esophagus delivers food to the stomach

•Stomach

Temporary storage area for food and allows it to mix with gastric juice to produce chyme

It has 2 sphincters cardiac and pyloric sphincter

The wall of the stomach is lined with millions of gastric glands which Together secrete 400-800ml of gastric juice at each meal several kind of cell are found in the gastric gland

chief cell : secrete pepsinogen activate pepsin for protein digestion

Parietal cell: secrete hydrochloride acid HCl

Mucous cell : secrete mucus and alkaline substances to help neutralize HCl in the gastric juice

G cell : secrete a hormone called gastric which stimulates the parietal cell and overall gastric

A very little absorption occurs in the stomach

•Function of stomach

- It stores the food
- It breaks down large fats and protein molecules in food
- It empties the partially digested chyme into duodenum

•Small Intestine

The small intestine is where most chemical digestion takes place
Receives chyme from stomach perform majority of digestion and absorption of nutrients

the small intestine continues the process of breaking down food by Using enzymes released by the pancreas and bile from the liver

It has three regions

Duodenum

Jejunum and ileum

•**Duodenum**

Upper region receiving chyme from stomach and digestive enzymes

From pancreas and bile from liver and gallbladder

•**Jejunum and ileum**

The jejunum is where chemical breakdown of the food chyme is completed pancreatic enzymes along with enzymes produced by the jejunum wall finalise food digestion process

Ileum is the final section of the small intestine

The main function of ileum is to absorb nutrients

Bile is also absorbed here and return to liver through the

blood vessels in the intestinal walls The I absorbed watery

remains of the food chyme now pass into the large intestine for

water removal and final processing before being expelled from the body

•**Large intestine**

After all the nutrients have been absorbed from ingested food

during its passage through the small intestine, the watery waste

passes into the large intestine .It is the final section of the

gastrointestinal tract and it's main function is remove to remove

from the food waste and compress it into a form for easy

expulsion from the body

Large intestine consists of five sections

- cecum
- ascending colon
- The transverse colon
- The descending colon
- the sigmoid colon and the rectum

•**Function**

- Reabsorption of remaining water and electrolytes
- Production and absorption of vitamins B and k
- Elimination of feces

•**Liver**

The liver is one of the most important and largest organ

In the human body

Functions

The liver has a multitude of important and complex functions

- Filters and processes nutrient rich blood of carbohydrates,protein
And lipids from intestine
- production and regulation of cholesterol
- production of bile which emulsified fats
- Removes drugs and hormones from circulation
- The liver stores a multitude of substances including glucose in the
Form of glycogen
- Storage of vitamins and minerals

Vitamin A

Vitamin D

Vitamin B12

Vitamin k ,iron and copper

Pancreas

The pancreas is a elongated organ

It is divided into the

Head

Body

Tail

Function

The pancreas is involved in blood sugar control and metabolism
within the body

Pancreatic islet are present in the pancreas

Within these islet are four type of cell which are involve in

Regulation of blood sugar level

Alpha cell that secrete glycogen

Beta cell that secrete insulin

Delta cell secrete somatostatin

Gamma cell that secrete pancreatic polypeptide

Question no 2

kidneys are the vital organ of our body which are very important in order to reabsorb
the vital nutrients and minerals for our body and it excrete the rest of the waste material in
the form of urine

Kidney remove the waste product of metabolism, excess water and salt from
Blood and maintain the PH

Urine is formed in the kidneys through a filtration of blood. Urine is then passed through
the ureters to the bladder , where it is stored ,the urine is passed from the bladder through
the urethra to the outside of the body

Urine formation

Urine is the liquid waste product of human body. It contains urea, uric acid, salt water and other waste products that are the result of various metabolic processes occurring in the body. It is formed in the primary excretory organ, the kidney. The structure and functional unit of the kidney is called the nephron. Millions of nephrons are involved in the process of urine formation.

The formation occurs in 3 steps or phases

Glomerulus filtration

Reabsorption

Secretion

Glomerular filtration

This process occurs in the glomerular capillaries. The process of filtration leads to the formation of an ultrafiltrate. The fluid contains both useful as well as dissolved waste material. The blood gushes into these capillaries with high pressure and gets filtered across the thin capillary walls. Everything except the blood cells and protein are pushed into the capsular space of Bowman's capsule to form ultrafiltration.

Glomerular filtrate contains water, waste product, glucose, excess salt and other chemicals.

Tubular Reabsorption

During glomerular filtration, all substances except blood cells and protein are pushed through the capillaries at high pressure. At the level of proximal convoluted tubule, some of the substances from the filtrate are reabsorbed. These include sodium chloride, potassium, glucose, amino acids,

bicarbonate, and water. 99% of the water that leaves the blood comes back through proximal convoluted tubule, glucose entirely reabsorbed back from proximal tubules into the peritubular capillaries.

Sodium is partially reabsorbed; amount depends largely on how much salt we take in food. Absorption of some substances is passive; some substances are actively transported while others are co-transported. The absorption depends upon the permeability of different parts of the nephron. The distal convoluted tubule shows selective absorption. The substances and water which are reabsorbed are taken up by the peritubular capillaries to be returned to the blood.

Secretion

The peritubular capillaries that help in transporting the reabsorbed substances into the bloodstream also help in actively secreting substances like H⁺ ions, K⁺ ions. Some drugs are not filtered in the glomerulus and so are actively secreted into

the filtrate during the tubular secretion phase