Digestion and teeth (7.2 and 7.3)

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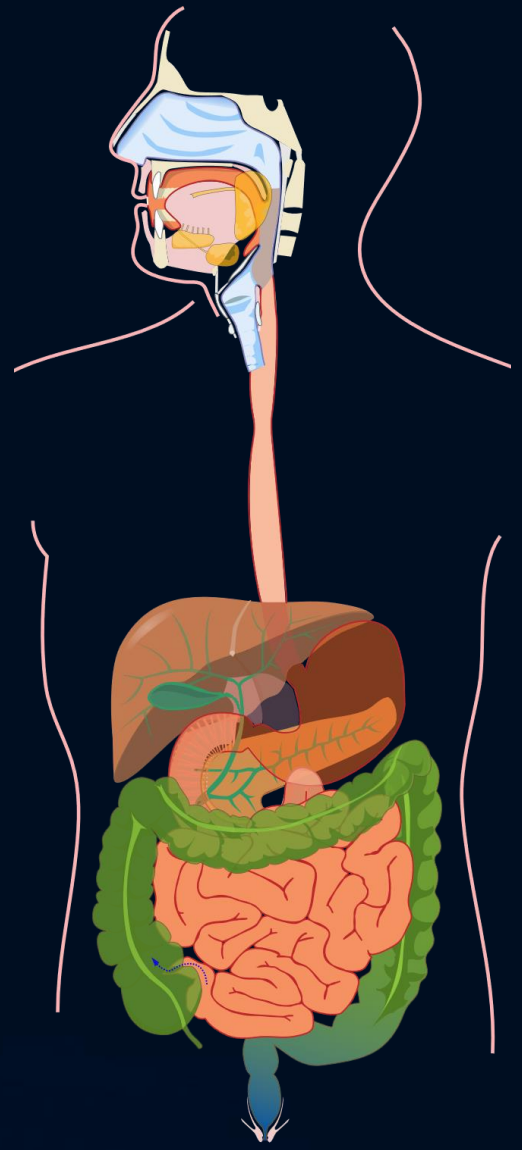
Digestion

- Ingestion: The taking in of food (into the alimentary canal through the mouth
- Alimentary Canal: long tube present in mammals that runs from one end of the body to the other
- Absorption: the food movement from the alimentary canal into the bloodstream
- Egestion: Food that the body is unable to digest is excreted from the body
- Digestion is the process of breaking down of food molecules into molecules small enough to be absorbed into the bloodstream and used by cells



Mechanical and Chemical Digestion

- Mechanical digestion

i. Large pieces of food broken down physically by the body into smaller pieces.

ii. Example:- teeth, alimentary canal movement

- Chemical Digestion

i. Insoluble food molecules broken down chemically by the body into small soluble molecules

ii. Involves enzymes

iii. Example:- Stomach, saliva (salivary amylase)

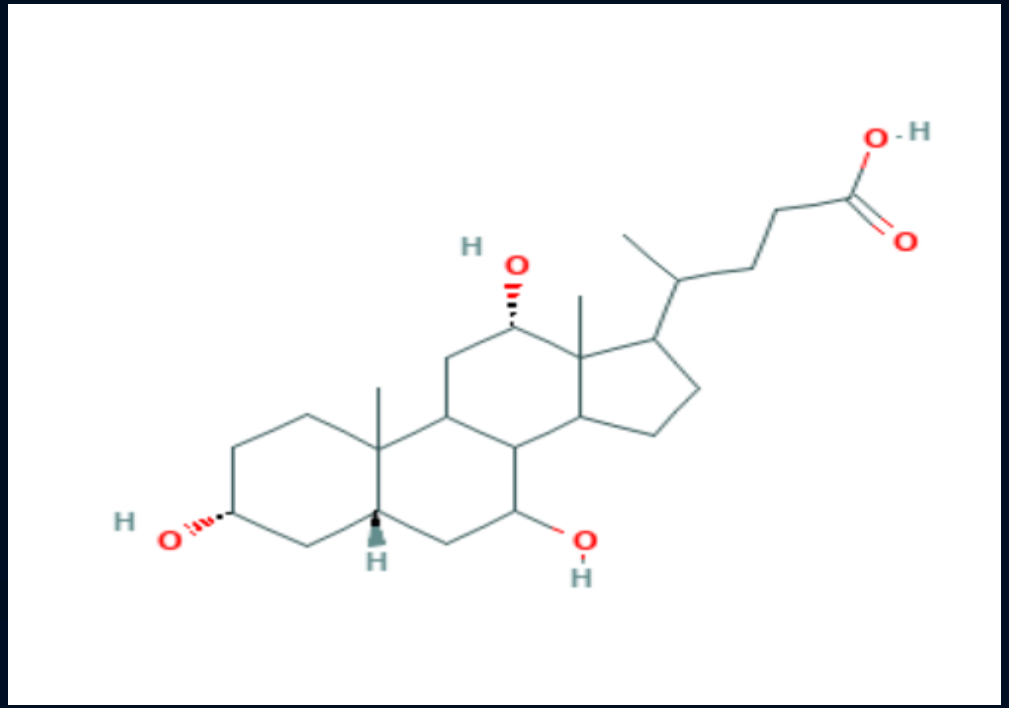
Simple sugars, water, vitamins and minerals are directly absorbed into the bloodstream as they do not need digestion

Bile

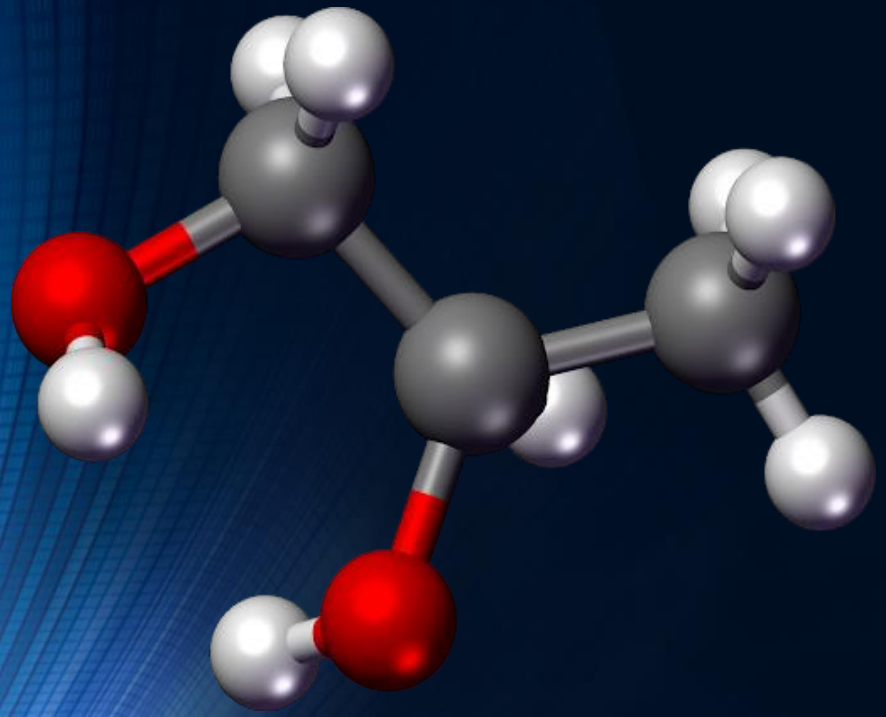
- The liver produces bile, a substance stored in the gallbladder

i. Bile is alkaline, and so it is released into the stomach to neutralize the acids slightly, and make the pH ideal for enzymes to break down the food

ii. Bile helps in breaking down large drops of fat into smaller ones. This gives the fat a larger surface area for the enzymes to break it down



Fat Digestion



Teeth (Mechanical Digestion)

Break down big bites of food to smaller ones

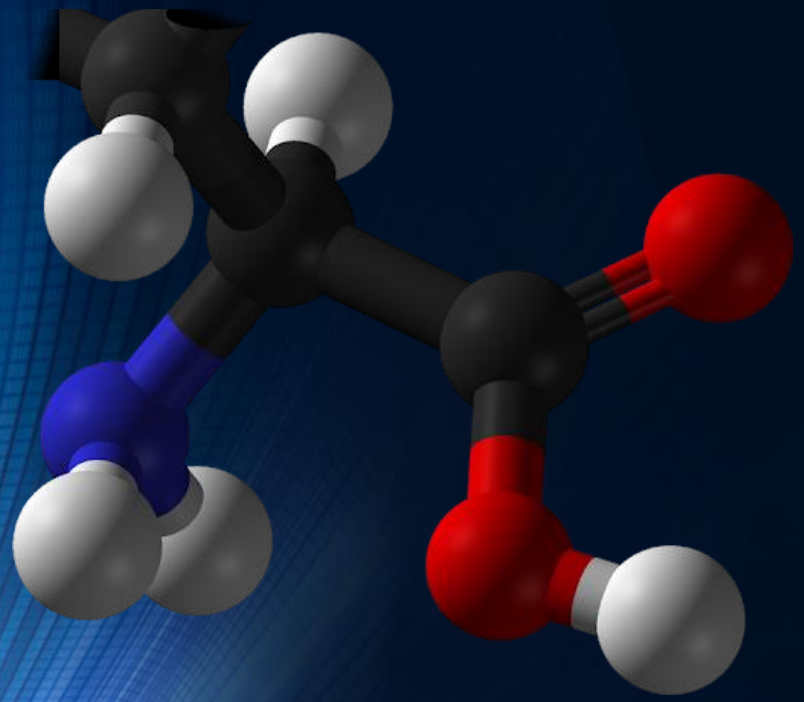
Bile Salts (Chemical Digestion)

Breaks down large bits of food to smaller fat droplets

Lipase (Chemical Digestion)

Breaks down fat molecules to fatty acids and glycerol

Proteins Digestion



Teeth (Mechanical Digestion)

Break down big bites of food to smaller ones

Water in digestion juices

Breaks down large bits of food to smaller pieces of food and food in solution

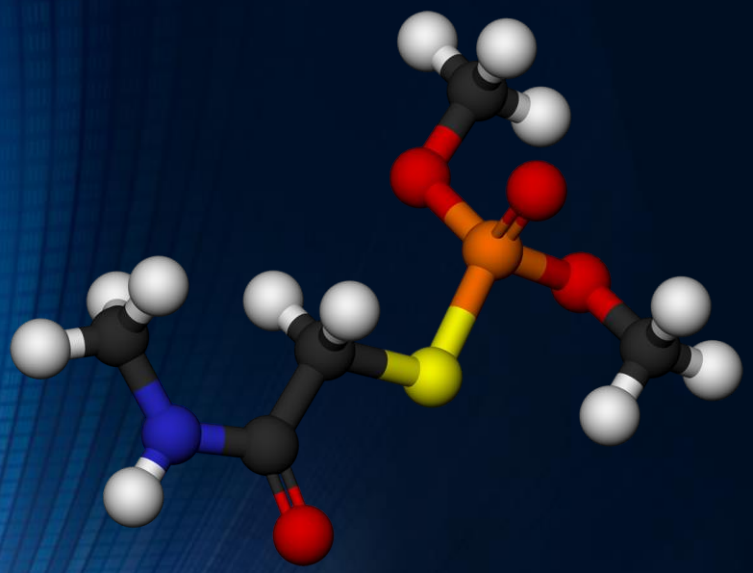
Protease (Chemical Digestion)

Breaks down protein molecules to polypeptide molecules

Peptidases (Chemical Digestion)

Breaks down polypeptide molecules to amino acid molecules

Carbohydrate Digestion



Large carbohydrate molecules, such as polysaccharide are broken down into simple sugars, called monosaccharides.

Teeth (Mechanical Digestion)

Break down big bites of food to smaller ones

Water in digestion juices

Breaks down large bits of food to smaller pieces of food and food in solution

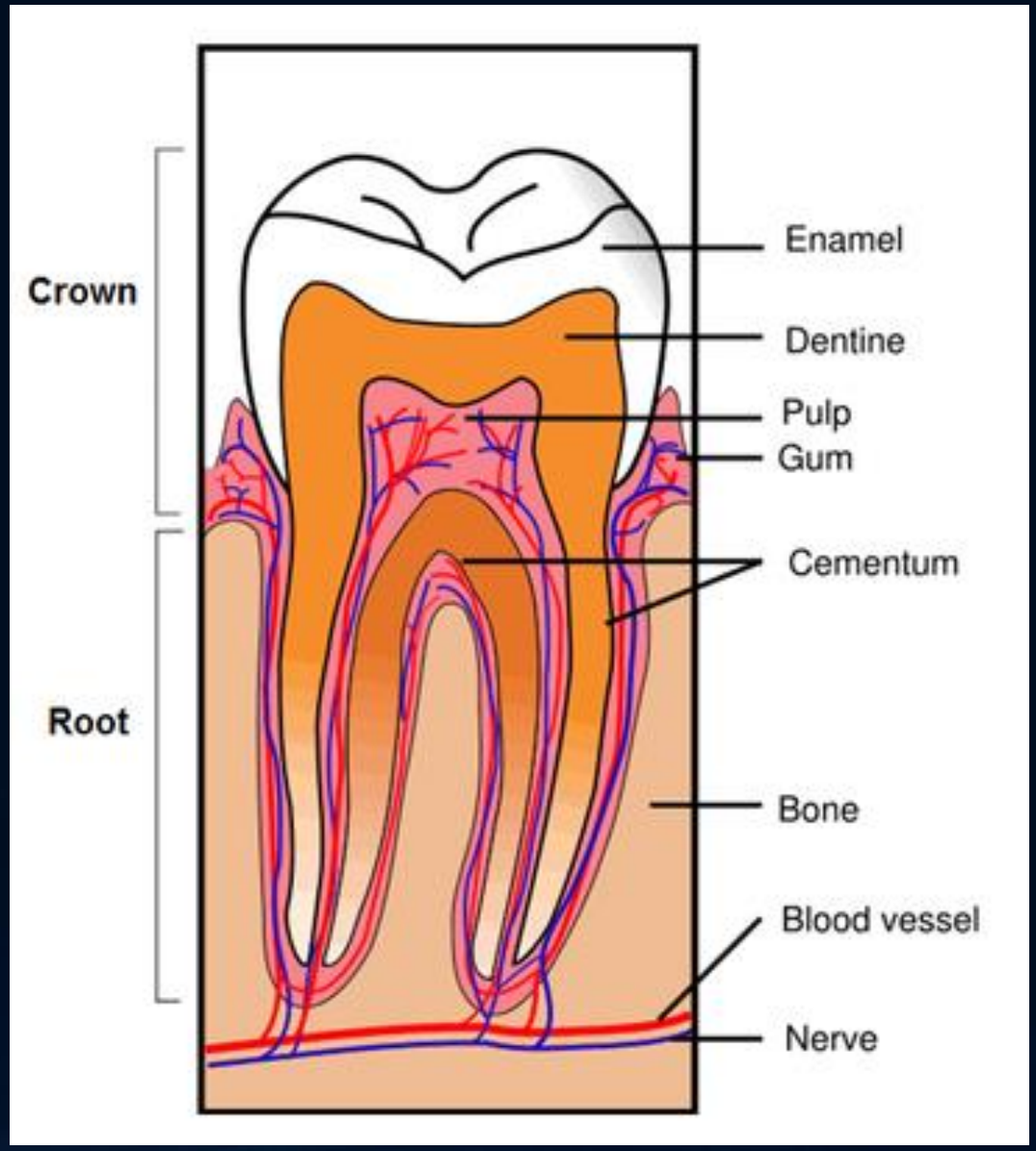
Amylase (Chemical Digestion)

Breaks down Carbohydrate molecules into maltose molecules

Maltase (Chemical Digestion)

Breaks down maltose molecules to glucose molecules

Teeth


Crown
Root
Enamel
Dentine
Pulp
Gum
Cementum
Bone
Blood vessel
Nerve

Teeth

- Teeth are a part of ingestion and the mechanical digestive system. It makes it easier for the enzymes to break down the food.
- Parts of tooth

i. The part embedded in the gum is called the root

ii. The part we can see is the crown, which is covered by enamel

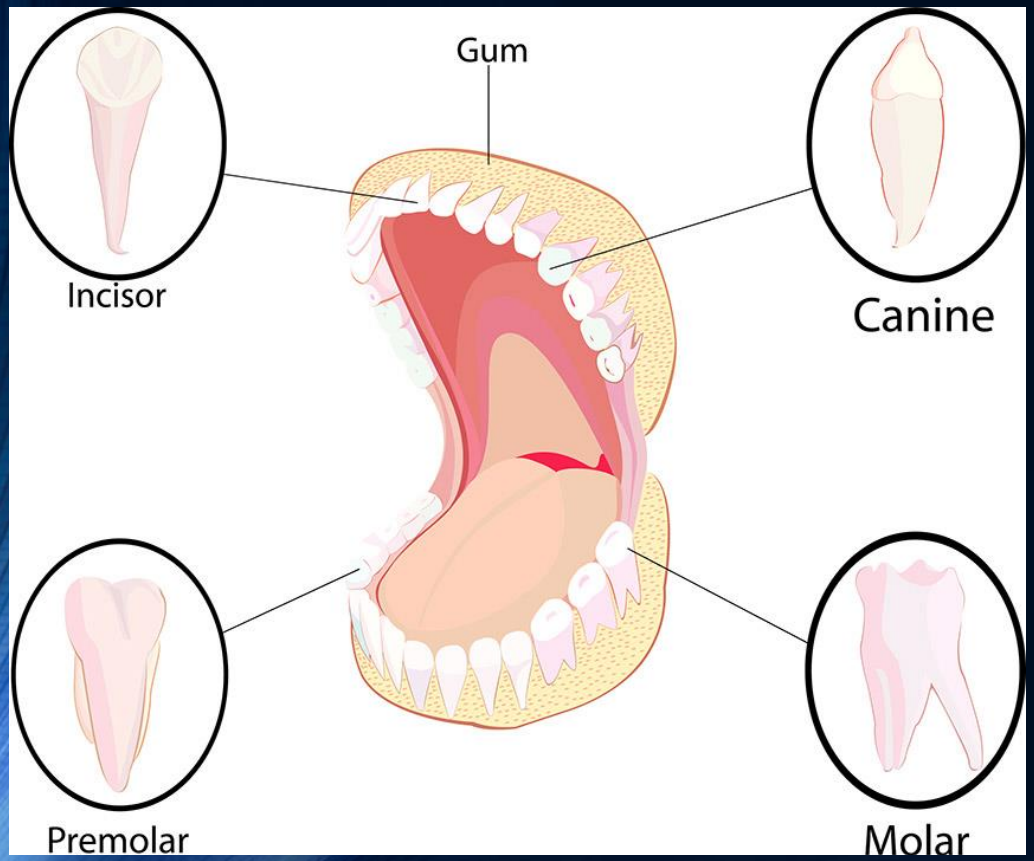
iii. Enamel is the hardest substance made by animals, but can be dissolved by acids

iv. A bone-like substance is present under the enamel, called the dentine, which is also a hard substance (but not as hard as enamel). It has channels containing living cytoplasm

v. Blood vessels and nerves are present at the center of the tooth, called pulp activity, and supplies dentine cytoplasm with oxygen and food

vi. The root of the tooth is attached to the jawbone with a substance called cement, which allows it to move slightly when biting or chewing

Types of Teeth



- Most mammal usually four types of teeth- Incisors, Canines, Premolars and Molars

i. Incisors are at the font, used to bite food

ii. Canines are at the sides of incisors

iii. Premolars and Molars are at the back of the mouth and are used to chew

- Mammals usually have two sets of teeth, Milk and Deciduous.
- The Milk set of 20 teeth starts growing at an age of around 5 months to seven years
- The Deciduous set grows after the first set falls out. The 20 teeth are replaced, and 12 new ones grow, to make the 32 teeth altogether

Dental Decay

- Dental decay is caused by bacteria. Bacteria feed on sweet food in the teeth for respiration, which release acids. The acids break down and destroy the enamel and the dentine
- Some bacteria form a sticky layer over the teeth and between the gums, called plaque
- Plaque is easy to remove unless it is left for a long time, when it hardens to form tartar which ca not be removed by simple brushing

Gum and Tooth Decay

- Plaque left unremoved can infect gums, making them swell and bleed. It might be painful if it reaches the root, and will loosen the tooth until it will have to be removed
- Bacteria will feed on sugar and gradually dissolve the enamel. However the dentine dissolves faster than enamel and reaches the root faster. A tooth left untreated will have to be taken out
- Ways to avoid tooth decay

i. Not eating too much sugar to avoid tooth decay
ii. Using fluoride toothpaste or drinking water with fluoride regularly will make the teeth more resistant to tooth decay
iii. Making regular visits to a dentist to stop a tooth decay before it becomes severe
iv. Taking in food rich in calcium to strengthen teeth

Thank You For Listening