

The Digestive System

EQ: How do the accessory organs help with the digestion of food and protection of your intestines?

- I. The Big Picture → Image on last page of notes
- II. Two Types of Digestion
 - a. Mechanical – think ripping, churning – think teeth and stomach
 - i. Teeth
 1. We use teeth to masticate (chew) our food
 2. We usually have two sets throughout life – baby teeth and permanent teeth
 - ii. Chemical – think enzymes and chemical reactions – think mouth (starch), stomach (acid), and small intestine
 - i. Mouth : salivary amylase – starch
 1. Salivary Glands
 - a. We have 3 pairs of salivary glands
 - i. Parotid
 - ii. Submandibular
 - iii. Sublingual
 - b. produce saliva
 - i. enzyme salivary amylase
 - ii. initiates starch digestion
 - ii. Stomach : Pepsin and HCl – protein
 - iii. Pancreas : trypsin – protein
 - iv. Small Intestine: trypsin (& other pancreatic enzymes) – protein. Bile & lipase – fat
- III. Peristalsis.
 - a. You can swallow food while “standing” on your head
 - b. This is thanks to peristalsis
 - i. involuntary waves of contraction/relaxation of your alimentary canal
 - c. Guess what happens when peristalsis goes backwards?
- IV. A Look at Chyme
 - a. Chyme is what we call partly digested food as it leaves the stomach; it’s full of good stuff...yum!
- V. Pancreas
 - a. Produces enzymes that breaks down chyme
 - b. Its solutions are secreted into the duodenum and neutralize the stomach acid
 - c. The pancreas also has an endocrine function
- VI. Liver & Gall Bladder
 - a. The liver is the largest gland in the body – it has many roles in metabolism but in digestion it produces
 - i. Bile – a yellow to green solution that emulsifies fat (breaks big fat globs into little globs)
 - b. Bile is stored in the gall bladder
- VII. Absorption
 - a. Now that food is broken down to molecular size, it needs to be sent to the blood stream
 - b. The major site for absorption is the small intestine
 - c. The villi are loaded with capillaries and that’s where the action happens
- VIII. Elimination
 - a. The large intestine is the player here

- b. No enzymes but a lot of symbiotic bacteria, which make vitamin K and some B for us
- c. Water is absorbed here to produce the end product – feces
- d. What you see here is what you ate hours ago!
- e. A Word on Farts
 - i. Also called flatus
 - ii. Produced by large intestine bacteria breaking down what little nutrients are left
 - iii. Mostly CO₂, methane, and hydrogen sulfide
 - iv. About 500 ml/day
 - v. Certain foods cause more gas production; carbohydrate-rich foods like beans, certain green vegetables

