

The Human Body Systems

Chapters 18

I. Digestion

- a. Basic “**tube within a tube**” digestive system
- b. The “tube is made up of specialized organs with different phases of digestion taking place in each one.
- c. Order of movement: **Oral Cavity** (mouth)- **Pharynx** (throat)- **esophagus**- **stomach**- **duodenum**-**small intestine**-**large intestine**- **rectum**- **anus**.
- d. **Accessory Glands** (not actually in the digestive system)- Their secretions pass into digestive system through a duct: Salivary glands- liver- gall bladder- pancreas
- e. **The Mouth and Pharynx:** Mechanical (chewing) and Chemical digestion begins
 - i. 3 pairs of salivary glands secrete saliva to moisten, lubricate and begin breakdown of carbohydrates
 - ii. Chewed up food that is mixed w/ saliva is called bolus
 - iii. Tongue moves bolus to pharynx
 - iv. Automatic swallowing reflex begins and moves bolus to esophagus
- f. **Esophagus**
 - i. Involuntary contractions and relaxation of smooth muscle surrounding esophagus moves food down esophagus: Peristalsis
 - ii. **Cardiac Sphincter:** Ring shaped muscle separating the esophagus from the stomach
- g. **Stomach**
 - i. Mechanical and chemical digestion
 1. **Mechanical:** stomach walls squeeze and churned together
 2. **Chemical:** stomach lining secrete digestive enzymes and hydrochloric acid
 3. Stomach also secretes **mucus** to protect the stomach
 - ii. **Acidic**
 - iii. Continued digestion of carbohydrates and digestion of protein begins
 - iv. Liquids pass through in 20 minutes or less
 - v. Solids broken down into **chyme** and slowly passed out of the **pyloric sphincter**
- h. **Small Intestines**
 - i. About **20 feet long** and **1-2” in diameter**
 - ii. Most chemical digestion takes place in the small intestine
 - iii. Three parts: **duodenum, jejunum, and the ileum**
 - iv. Several features to increase surface area
 1. Small intestine **very long**
 2. Lining has **many folds**
 3. Lining covered w/ millions of finger-like projections: **villi**
 4. Villi have more tiny projections: **microvilli**
 - v. **Alkaline**
 - vi. **Chyme** mixed w/
 1. **Pancreatic juices:** neutralize stomach acid, digestive enzymes for protein, carbs and fat
 2. **Bile:** made in liver, stored in the gall bladder, emulsifies fats
 3. **Intestinal enzymes:** completes digestion of carbs, protein and fat
 - vii. Carbohydrates, proteins and fats are finished being digested
 - viii. Food nutrients are absorbed into the blood
 - ix. Undigested and unabsorbed food passes from Small Intestines to the Large Intestines
- i. **Large Intestines**
 - i. About **5 or 6 feet** in length and **3 or 4 inches in diameter**

- ii. 3 parts: **Ascending, Transverse and Descending**
- iii. Point where small intestines join the large: small pouch: **Appendix**
- iv. Appendicitis: infected/ inflamed appendix: pain in lower right side of abdomen
- v. Main Function:
 - 1. **Reabsorbtion of water** from the food mass
 - 2. **Reabsorbtion of vitamins**
 - 3. **Elimination** of undigested food
- vi. Undigested food: feces – stored in the **rectum** and out the **anus**