

CH 8: Digestive System & Nutrition

Overview digestive system:

functions - acquisition of nutrients (chemical compounds needed to sustain life)

- food → blood
- removal of metabolic/chemical waste
- liver → intestines → elimination in feces

major organs

- Gastrointestinal Tract (GIT)
 - oral cavity, esophagus, stomach, intestines
- accessory organs
 - liver, gall bladder & pancreas

What are the main steps in digestive process →

- Ingestion - intake of food via the mouth
- Digestion - mechanically or chemically (enzymes) breaking down food into their subunits
- movement - food must be moved along the GI tract in order to fulfill all functions
- absorption - movement of nutrients across the GI tract wall to be delivered to cell via the blood
- Elimination - removal of indigestible molecules.

*What are the 4 major layers that make up the wall of the GI tract?

- Mucosa - innermost layer of epithelium that produces mucus that protects the lining & also produces ^{digestive} enzymes
- Submucosa - 2nd layer of loose connective tissue that contains blood vessels, lymphatic vessels & nerves.
- muscularis - 3rd layer of 2-3 layers of smooth muscle that move along the GI tract
- Serosa - outer lining that is part of the peritoneum.

Visualizing Layers of GI tract

What is the pathway that food follows?

- mouth - pharynx - esophagus - stomach - small intestine - large intestine - rectum - anus •

The 1st part of the digestive tract includes the:

- mouth - pharynx - esophagus

The mouth →

The mouth

- 3 pairs of salivary glands secrete salivary ~~amylase~~ ^{amylase} that begins carbohydrate digestion
- TONSILS @ the back of the mouth & other lymphatic tissues are important in fighting disease
- contains teeth that begin the mechanical breakdown
- the tongue is covered in taste buds & also assists ⁱⁿ food in mechanical breakdown & movement of food.

Anatomy of the mouth

* Teeth

- dental caries (cavities) occur when bacteria metabolize sugars & produce acids, so limiting sugar intake & brushing teeth reduces these!

* Pharynx & esophagus

pharynx - a cavity between the mouth & esophagus that serves as a passageway for food (& air)

esophagus - a long, muscular tube that carries food to the stomach

How do we swallow food?

Voluntary phase: the beginning of food being swallowed from the mouth into the pharynx.

Involuntary phase: once the food is in the pharynx swallowing becomes a reflex

- epiglottis covers the voice box to make sure the food is routed into the esophagus
- food moves down the esophagus through peristalsis

Health focus: heartburn • occurs when acids ^(rhythmic contraction) from the stomach pass into the esophagus (acid reflex)

- burning sensation in the esophagus
 - chronic heartburn is called gastroesophageal reflux disease (GERD)
- all meals
big → • TIPS for decreasing - avoid ^{fat} for meals - don't overeat
exercise lightly