Anatomy: Large Intestine

Chapter 14

Goals for this class

- Be able to describe the anatomy of the large intestine
- Be able to describe the functions and processes of the large intestine
- Be able to describe the function of enzymes or digestive fluids in breaking down food

Structure/Function of Large Intestine

- Extends from ileocecal valve to anus
- Absorption of water & elimination of waste
- No villi
- Lined with goblet cells that produce mucus for lubrication
- Outer walls puckered with haustra which aids in contraction

Divisions of Large Intestine

- Cecum - 1st portion; ileocecal valve that allows indigestible material from small intestine
- Appendix - sac extending from cecum

Divisions of Large Intestine

- Ascending colon - travels up right side of abdominal cavity; turns at the hepatic flexure
- Transverse colon - travels across the abdomen; turns at the splenic flexure

Divisions of Large Intestine

- Descending colon - travels down left side of abdomen
- Sigmoid colon - S-shaped
- Rectum - storage chamber
- Anal sphincter - external & internal; voluntary & involuntary muscles; opens during defecation
Propulsion of Large Intestine
- Peristalsis and mass movements occur in the large intestine
- Mass movements are strong waves that move over colon 3-4 times daily
- Bulk (fiber) keeps stool soft and increases the strength of contractions
- When feces enter the rectum defecation reflex is initiated

Defecation
- Walls of sigmoid colon and rectum contract and anal sphincter relaxes
- Brain can control the external sphincter and rectal walls relax
- With the next mass movement defecation reflex is initiated again

Constipation
- Food remains in the large intestine too long and too much water is absorbed
- Makes the stool hard and difficult to pass
- Results from lack of fiber, poor bowel habits and laxative abuse

Diarrhea
- Any condition (bacteria) that rushes food through the large intestine before water is absorbed
- Can cause dehydration and electrolyte imbalance if prolonged

Digestion of Carbohydrates
- Salivary amylase - mouth
- Pancreatic amylase - produced by pancreas & sent to duodenum
- Brush border enzymes - dextrinase, glucoamylase
- Lactase (lactose), maltase (maltose), sucrase (sucrose)
- All of these are produced or act in small intestine

Digestion of Proteins
- Begins in stomach with pepsin & rennin (more abundant in children)
- Pancreas - trypsin, chymotrypsin, carboxypeptidase
- Brush border - aminopeptidase, carboxypeptidase & dipeptidase
Digestion of Fats/ Nucleic Acids

- Fats
  - Bile emulsifies fats
  - Pancreatic lipases sent to small intestine to complete fat digestion
- Nucleic Acids
  - Pancreas produces nucleases to breakdown nucleic acids (DNA, RNA)

Key Questions

- Why is the large intestine important? Without it what would happen to water levels in our bodies?
- What are the first and last parts of the digestive system?
- Does food ever truly enter your body?
- How do you think that the body knows to make certain digestive enzymes or juices?