Overall Structure of the Colon

The colon is structured as one long continuous hollow tube surrounded by muscles. The colon begins where the small intestine ends and extends down to the anus. The colon measures about 5 feet long and 2.5 inches in diameter.

The lumen (interior) of the colon has a delicate lining. In addition to lubricating the passage of waste through the colon, this moist lining protects underlying tissues and the nerve endings that extend down into the colon wall.

Parts of the Colon, Movement of Waste & Stools

Several parts make up the continuous tube of the colon. Each part contributes to the movement of materials and the formation of stools. The parts include:

Illeocecal Valve: The illeocecal valve is a fold of mucus membrane at the entry way to the colon. It is located where the small intestine meets the colon. Materials from the small intestine pass into the colon through this valve.

Vermiform Appendix: The appendix is attached to the bottom of the cecum. This is a twisted coiled tube that is about 3 inches long. The function of the appendix is not known.

Cecum: The cecum is a kind of reservoir to receive fecal materials as they enter the colon. The cecum is located below the illeocecal valve at the base of the colon. The upper part of the cecum is open to the colon. The muscles of the cecum and the colon advance feces upward out of the cecum.

Ascending Colon: The ascending colon is located on the right side of the abdomen above the cecum. Here, most of the water is absorbed from the feces as it moves upward through the ascending colon. The ascending colon “ends” at the hepatic flexure where the colon bends to the left and connects to the transverse colon.

Transverse Colon: The transverse colon runs laterally across the abdomen below the belly button. As feces move across the transverse colon, stools begin to take form. The transverse colon “ends” at the splenic flexure where the colon bends again and connects to the descending colon which heads down the left side.

Descending Colon: The descending colon runs down the left side of the abdomen. Stools move down the descending colon. Stools are now more solid in form. Here, stools may be stored for a time. The descending colon “ends” where it continues into the sigmoid colon.

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**Sigmoid Colon:** The sigmoid colon angles to the right, curving down and inward to about the midline, then it curves slightly upward where it connects to the top of rectum. Stools continue their descent as they move through sigmoid colon. Stools may also be stored here for a time before they are moved into the rectum.

**Rectum and Rectal Sac:** The rectum is a passageway about 8 inches long that leads to the anus. The rectum is usually empty until mass peristalsis drives the stools into the rectum. When stools fill the rectum, the elastic quality of the walls permit the rectum to expand, creating a sac to accommodate stools just prior to elimination.

**Anal Canal and Anus:** The last inch of the rectum is called the anal canal. The mucus membrane of the canal has folds called anal columns that contain arteries and veins. The opening of the anal canal to the exterior is called the anus. The anus is guarded by internal and external sphincters (muscles) that keep the anus closed except during elimination of a stool.

**Processing & Activity in the Colon**

Aided by enzymes and muscular action, the mouth, stomach and small intestine perform their individuated jobs of breaking down and absorbing nutrients. The liquid that these organs generate is called chyme. However, when it passes to the colon, the liquid that is leftover is mostly waste matter. This liquid waste matter is called feces. It is passed to the colon for further processing and elimination.

In the colon, instead of the enzymatic action that occurs in other organs of the G.I. tract, further breakdown of fecal matter and the production of substances occurs by way of bacterial fermentation.

Cellular exchanges, bacteria, and muscular actions all play a part in processing the feces as it passes through the colon:

**Fluid Absorption:** The colon lining contains epithelial cells that absorb fluids and other substances such as vitamins and electrolytes. It is the absorption of fluids and bacterial processing that transforms the soupy fecal matter into a stool.

**Secretion of Mucus:** The colon lining contains epithelial cells that secrete mucus. This mucus moisturizes and lubricates the colon lining. This lining protects the colon wall and nerve tissues.

**Bacterial Growth:** Bacteria live and grow along the colon lining. Using the fluids and foods you intake, bacteria actually manufacture the nutrients that sustain their environment and their food supply.

**Manufacture of Some Vitamins & Electrolytes:** Bacteria change proteins into amino acids and break these amino acids down further into indole and skatole (which gives stools their odor), hydrogen sulfide, and fatty acids. Bacterial action also synthesizes some vitamins (K and some B), electrolytes, and breaks down bilirubin into a pigment that gives stools their brown color.

**Production of Lubrication:** Bacteria ferment soluble fiber into a lubricating gel that is incorporated into the stool mass as it is formed. This gel helps to make stools soft and flexible. Some of this gel also coats the exterior of the stools and is used by the colon to moisturize the colon lining. This lubrication helps to ease stool passage through the colon.

**Defense Against Infection:** Healthy intestinal bacteria help to groom the colon and keep it clean so that infections do not develop. They also help to fight the growth of infectious bacteria.

**Stool Formation:** To form stools, muscles in the colon churn the soupy liquid fecal matter as fluids are extracted until the particles have the consistency to form a stool.

**Note:** Because fluid absorption is one of the main jobs of the colon, it will continue to work at drawing water out of stools even after they are formed. As a result, stools that remain in the colon too long can become dry and hardened.

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Muscular Action of the Colon

In the colon, muscular action moves materials along through the colon. Muscles located on the exterior run along the length of the colon extending and retracting the colon like a rubber band. The interior muscles wrap around the colon in circular bands that distend and contract the colon wall in an action that is similar to opening and closing a fist.

There are five types of muscular action that takes place in the colon:

1. **Haustral Churning:** The colon wall (pillowy forms called haustra) expand and contract to squeeze the waste forward creating larger masses as it moves along. Haustral churning facilitates fluid extraction and helps to advance waste through the colon.

2. **Peristalsis:** Joint muscular action of the interior and the exterior muscles produce a wave like motion to move waste along the entire length of the colon.

3. **Mass Peristaltic Reflex:** Food in the stomach triggers a reflex in the middle of the transverse colon that produces mass peristalsis. This strong muscular action drives stools into the rectum.

4. **Defecation Reflex:** Movement of stools into the rectal sac, along with pressure against the rectal wall, signals the brain to trigger the defecation reflex (the signal to the body to “move” the bowel).

5. **Cooperative Abdominal Effort:** Defecation is aided by cooperative and intentional (but gentle) abdominal straining to push stools out of the rectum. Avoid straining hard against stools.

The Function of the Colon Lining

The colon has a delicate lining that is moisturized by mucus and also by a gel that is a byproduct of bacterial fermentation. A colon lining that is moist and healthy:

- Protects nerve endings in the colon wall. Neural messages between the brain and colon can be reliably transmitted.

- Lubricates stool passage promoting stool transit.
- Facilitates the movement of fluids into and out of the colon. Nutritional uptake of vitamins and electrolytes is optimized.
- Promotes the growth of healthy intestinal bacteria. Bacteria help to further breakdown waste, create additional lubrication, groom the colon, and protect it against infection.

Stool Transit & Defecation

Stool transit time is the length of time it takes for stools to pass through the colon. “Speedy” stool transit time is the term used to describe the most desirable speed and time for stool passage. When stool transit is “speedy” just the right amount of fluid is extracted. When stool transit is slow, stools can dry out and become hard. Constipation results. When stools move too quickly, not enough water is extracted, stools are loosely formed or not formed at all. Diarrhea occurs.

The defecation reflex is triggered when stools move into the rectum and expand the rectal sac. The reflex is a series of involuntary muscular contractions that quit after about 10-15 minutes, or sooner, if the bowel is moved. It is the signal the body that it is time to move the bowel. Defecation occurs with cooperative voluntary and involuntary muscular actions.

Achieving & Maintaining Healthy Bowel Function

To achieve and maintain healthy bowel function and regularity, attention must be given to the muscles, the lining, the quality of stools, and the reflexes of the colon. The following suggestions may help you to improve and maintain your colon health:

1. **Exercise Daily.** Five minutes of walking or stair climbing is enough to keep the intestinal and abdominal muscles toned.
Can Fruit-Eze™ Help?
Yes. Fruit-Eze™ pure fruit regularity blend can help to both heal and retrain the colon.
- Fruit-Eze™ improves stool quality and texture and creates soft stool by preventing fecal matter from drying and hardening.
- Fruit-Eze™ strengthens intestinal muscles by providing a flexible material (soft stools with good volume) that help to exercise and tone intestinal muscles.
- Fruit-Eze™ promotes a healthy colon lining by providing lubrication.
- Fruit-Eze™ speeds stool transit time.
- Fruit-Eze™ acts as a natural laxative through the break down of soluble fiber into a lubricating gel.
- Fruit-Eze™ nourishes healthy bacteria which help prevent infection, help to further break down waste, help to keep the colon clean, and help to produce additional lubrication in the colon.
- Fruit-Eze™ helps to restore colon health following surgery.
- Fruit-Eze™ can help with regularity during pregnancy and after delivery.

Achieve healthy bowel function and regularity with Fruit-Eze™ fruit blend.

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