

The Science of Treating Constipation

By

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The digestive tract is a muscular tube measuring 28 feet long that runs from the tip of the tongue to the anal opening. All the energy that humans extract from ingested nutrients must pass through that tube. At the end of the digestive tract undigested residue is evacuated. Failure to evacuate regularly and comfortably is called constipation.

The digestive tract tube is not a static fixed tube. It requires energy for digestion, absorption, and evacuation. A large percent of that energy comes from the ingestion of fiber in the diet.

Fiber refers to a diverse group of carbohydrates that humans cannot digest since they lack the digestive enzymes required to break down these sugar molecules. This inability results in fiber products passing through the upper portion of the digestive tract unchanged. Microbes that live in the large intestine (colon), however, contain enzymes capable of fermenting undigested fiber into chemicals that produce energy.

**All fiber, however, is not the same. The recommendation to “eat a high fiber diet” may, therefore, be highly confusing. There are two main types of fiber: Dietary fiber: Fiber found naturally in foods
Functional fiber: Fiber that is extracted from whole food and is added to processed foods. This classification, however, fails to define the health effects of the fiber containing product upon digestion and elimination.**

For many years, the food industry has used a classification of fiber based on the physical characteristic of solubility, namely soluble fiber and insoluble. In recent years, however, food scientists have recognized that the health benefits of fiber are based primarily on the chemical characteristic of fiber, fermentability, with two classes of fermentable fiber and non-fermentable fiber. The process of fermentation is carried out by intestinal microbes resulting in the release of energy producing chemicals which are critical for nourishing and supporting intestinal microbes and which are needed for multiple functions by the body. The older classification of fiber, soluble and insoluble, has, however, been retained by the food industry and most products that list fiber content still do so in terms of soluble and insoluble fiber. Most, but not all, soluble fiber is fermentable and most, but not all insoluble fiber, is not fermentable.

Nutritional scientists recommend that a female ingest at least 25 g of total fiber per day--38 g per day for a male. Presently, there are no published guidelines indicating how much soluble and how much insoluble fiber should be ingested to make up the recommended total dietary fiber for the day. It's reasonable to try to achieve a blend of about half soluble and half insoluble fiber each day.

A list of 108 food products that are rich in soluble (fermentable) fiber can be found in the monograph (FIBER, FIBER, FIBER) at kramermedicalclinic.com.

The following program outlines an approach to stimulating regular bowel function in those with constipation who cannot otherwise achieve this goal through diet alone. Dietary changes should always be used first in treating constipation before resorting to chemical means.

- 1. Add water to the stool. One way to accomplish getting water into the muscular digestive tube is to stimulate water excretion through channels that lead from the lining cells of the gut into the digestive tube. Those products that work by utilizing this mechanism include the following: ▪ Linzess® ▪ Amitiza® ▪ Trulance®**
- 2. Extracting water from the body into the digestive tract (osmosis). A second way to add water to the stool is through a process of osmosis essentially extracting water from the bowel wall into the digestive tube. Products that fit this category include magnesium compounds (such as magnesium oxide and magnesium citrate), cellulose (such as Citrucel®), and Lactulose (such as Cephulac®).**
- 3. Bowel wall muscle stimulants. A third way to improve constipation is by stimulating the muscles of the digestive tube that contract to propel the waste products out of the body. Examples of products that accomplish this include Senakot® , Cascara Sagrada® and Dulcolax®.**
- 4. Prolonging chemical stimulation in the junctions between the nerves and muscles of the gut—although rarely used is another way of improving evacuation of waste products. It involves fostering the release of chemicals which exist between the muscle and the nerve endings of the colon that control the power of intestinal contractions. The major chemical that does this is acetylcholine. Acetylcholine is only temporarily active for brief periods allowing the transmission of electro-chemical impulses between the nerves of the gut and the muscle. Acetylcholine is rapidly metabolized by the enzyme acetylcholinesterase. Medications that prolong the quantity of acetylcholine at the junction of the intestinal nerves and muscles are known as acetylcholinesterase inhibitors. This class of drugs is used only rarely for constipation and then only in the most difficult cases**

that have not responded to dietary measures or other traditional medications.

5. Enemas. When all other measures have been exhausted and constipation persists, bowel irrigations with enema can be considered.

Most brief intervals of constipation can be controlled with changes in the diet by increasing fiber and the occasional use of a laxative. Incorporating high fiber containing fruits, vegetables, nuts, berries, seeds, legumes, beans, and whole grains into the diet is a good starting point. Cereals like Raisin Bran and Kashi Cinammon Crunch are readily available, inexpensive and effective. Dates, figs, apricots raisins and prunes (and prune juice) all are effective in stimulating bowel movements.

More prolonged and/or poorly controlled cases of constipation should be treated by your medical care provider.