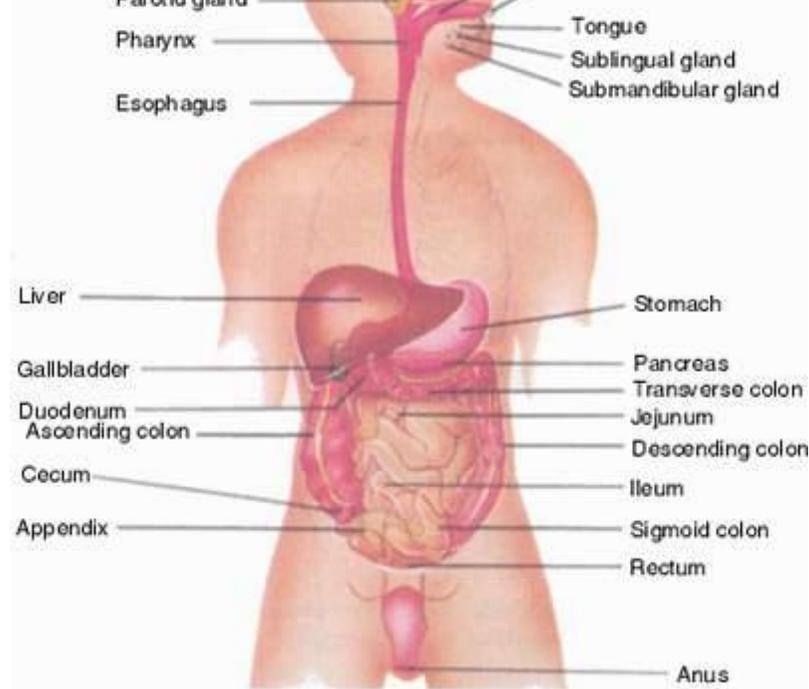


CERTIFIED ADVANCED HERBALISM COURSE - SESSION 14: The Digestive System

The digestive system breaks down the food we eat, extracting nutrients and assimilating them for use throughout the body. Proper digestive-system function is essential to maintaining good health and energy levels. The body requires nutrients from all three food categories (proteins, carbohydrates and fats) to survive.



Digestive concerns are common to Americans. These include indigestion, heartburn, acid reflux, insufficient enzymes, stomach ulcers and stomach cramps.

Examining the Digestive System

After food is chewed and swallowed, it passes through the esophagus and enters the stomach. The stomach secretes hydrochloric acid and certain enzymes to begin the breakdown and sterilization of the food. The stomach is particularly important to the digestion of proteins. Typically, the stomach will hold about a quart of food or liquid, but its muscular walls can expand to hold much more than this.

The stomach is lined with a durable mucous coating that protects it from hydrochloric acid and other gastric juices. Ulcers form when a portion of this mucous lining wears thin, and the digestive juices aggravate the stomach.

The bulk of nutrient assimilation takes place in the small intestine. The circulatory system carries nutrients from the small intestine to the cells of the body. The small intestine is lined with tiny fingerlike projections called villi and tinier cytoplasmic projections called microvilli. These villi increase the surface area of the intestine and allow for more efficient nutrient absorption. The average adult's small intestine is 10-13 feet long, and about one inch in diameter. Because of the villi and microvilli, the total surface area of the small intestine is about 180 square meters – just smaller than a tennis court.

The first 10 inches of the small intestine is known as the duodenum; it is the most important section in digestion. Here, enzyme secretions from the pancreas and bile secretions from the liver mix with the food and break down carbohydrates, proteins and fats into smaller units. The body can assimilate these nutrients in smaller forms and use them for energy. The duodenum also secretes lactase to digest milk products, and sucrase and maltase to break down sugars.

The next sections of the small intestine are the jejunum and the ileum. In this combined 9-12 foot segment, an additional 2-3 liters of intestinal juices are secreted each day. Because food particles have to be a certain size before they can be absorbed into the bloodstream, digestion and assimilation in this section can take several hours. The villi and microvilli absorb tiny nutrients that travel through the lymph vessels or into capillaries for transport to the liver. After the liver filters and processes these nutrients, they are sent throughout the body.

The pancreas is an important part of the digestive process, producing approximately three pints of digestive juices each day. These juices pass through the pancreatic duct into the small intestine. This organ also controls the amount of sugar in the blood by secreting two hormones, glucagon and insulin. Insulin and glucagon work as a check-and-balance system, regulating the body's blood sugar level.

The liver is also critical to digestion. It is located in the right side of the upper abdomen, under the diaphragm. This is the largest internal organ in the body, weighing about 3-4 pounds. The liver is composed of groups of cells called lobules. Anywhere from 50,000 – 100,000 lobules make up the liver, and each lobule has a central vein that drains blood into the hepatic veins, which eventually carry it to the heart. The liver produces bile, which breaks down, or emulsifies, fats. Bile drains from the liver lobules into the branches of the bile ducts that lead to the gallbladder, where it is stored.

All told, the liver performs more than 500 functions, many of them of a processing or storage nature. The liver processes potential poisons for removal from the body, including alcohol and drugs. It also breaks down old red blood cells and reprocesses body substances, extracting iron from hemoglobin, and reusing amino acids.

The liver stores carbohydrates as glycogen, which can be quickly converted into glucose (for energy) if needed by the brain, muscles or other organs. It also stores certain nutrients like vitamins (A, B-complex, B₁₂, D, E and K), releasing them into the blood when the body needs them. These reserves can last several months. The proteins albumen, globulin and fibrinogen – all components of blood plasma – are also manufactured in the liver.

Heptatitis C – Use Milk Thistle and cleanse the body.

Did You Know?

- 60-70 million Americans suffer from digestive disease (National Digestive Diseases Information Clearinghouse).
- Americans spent \$107 billion on drugs and antacids to fight digestive ailments in 1992.
- 70-year-olds may produce as little as half the enzymes they produced when they were 20.
- By age 50, many people will produce only 15 percent of the hydrochloric acid they produced at age 25. About one-third of all people over the age of 65 secrete almost no hydrochloric acid!
- Silymarin, a mixture of bioflavonoids found in the plant milk thistle, help protect the liver. Clinical studies show that silymarin has antitoxic properties and is effective in preventing liver damage.

Digestive System Analysis

If you have four or more of the following indications, you may consider nutritional aid to the digestive system.

- Lack of energy
- Body odor and/or bad breath
- Difficulty digesting certain foods
- Food allergies
- Poor resistance to disease
- Belching or gas after meals
- Skin/complexion problems
- Lack of a balanced diet
- Less than two bowel movements per day
- Lack of appetite
- Brittle or easily broken fingernails
- Dry, damaged or dull hair
- High-fat diet
- Food/chemical sensitivities
- Recurrent yeast/fungal infections
- Weak bones, teeth or cartilage
- Suffer from anxiety or worry

Digestive System Suggestions

- Avoid caffeine, alcohol and soft drinks.
- Eat raw fruits and vegetables rich in enzymes.
- Avoid overeating.
- Eat no later than 2-3 hours before bedtime.
- Avoid resting after meals.

Digestive System Products for the Stomach

The following products are listed with ingredients only as not to sell any particular product line. These ingredients can be purchased at any store you wish.

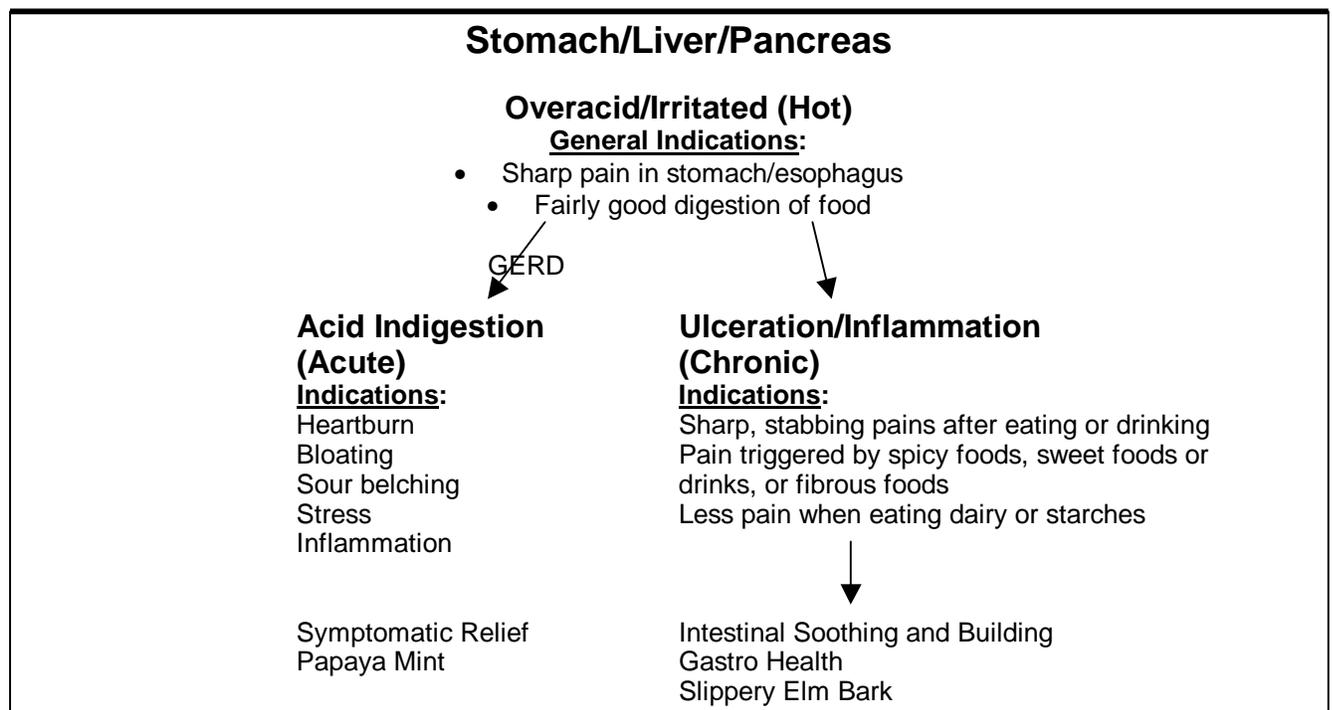
- Food Enzymes – Tablets that supply extra amounts of hydrochloric acid, pancreatic enzymes and bile salts to aid in the digestion of fats, proteins and carbohydrates. If food feels heavy entering the stomach or feels like it remains there for a long time (over two hours), Food Enzymes should enhance digestion.
- Symptomatic Relief – A combination of natural ingredients that help neutralize acid, soothe the stomach, improve digestion and control acid reflux. A combination that contains calcium carbonate, alginic acid (from kelp), wintergreen oil, papaya fruit, slippery elm bark, licorice root concentrate and ginger. This is not intended to address underlying causes of digestive disturbances.

- Papaya Mint – The freshness of peppermint is combined with the sweetness of papaya to bring you a combination that provides soothing benefits to the intestinal system. Papaya contains proteolytic enzymes that enhance the digestion of proteins, while peppermint encourages the production of digestive fluids as it sweetens your breath – an ideal combination.
- Intestinal Soothing and Building – A combination of slippery elm, marshmallow, plantain, chamomile, rose hips and bugleweed. This combination was designed to soothe and tone the digestive tract. It helps reduce irritation and relieve inflammation in the stomach, small intestine and colon.
- Gastro Health – Studies have shown that gastric ulcers are caused by Helicobacter pylori bacteria. This combination combines capsicum, cloves, Inula racemosa, deglycerrhizinated licorice and pau d'arco to promote digestion and inhibit the growth of this bacteria. It does not harm friendly intestinal flora. Capsicum is a known digestant. Cloves may have a positive effect on the healing process of gastric ulcers.

Digestive System Products for the Liver

The following products are listed with ingredients only as not to sell any particular product line. These ingredients can be purchased at any store you wish.

- Milk Thistle – This natural support to the liver contains a mixture of bioflavonoids, including silymarin. Milk Thistle strengthens the liver against auto-intoxication and stimulates protein synthesis in liver cells, which generates DNA and RNA.
- Liver Balance – Helps cool a hot liver and is especially beneficial for people with food allergies or who are easily irritated. It promotes the flow of bile, relieving a congested and “stuffy” feeling in the liver and intestines. Contains a host of Chinese herbs, including bupleurum, peony, pinellia rhizome, cinnamon, dang gui and more.
- Blood Build – Combination of 18 herbs, this combination is designed to nutritionally support the body’s blood and related systems. The liver, glands, nerves and circulatory system will benefit from the many natural roots, fruits and rhizomes.
- Spleen Activator – This combination combines Chinese herbs that “warm the center,” meaning they increase the energy of the stomach and aid the digestive process. This combination is a tonic for those with chronically weak digestion that leaves them thin and pale. It contains Panax ginseng, astragalus, atractylodes rhizome, hoelen discorea, lotus seed and 12 other Chinese herbs.



Stomach/Liver/Pancreas

Underacid/Weakened (Cold)

General Indications:

- Dull pain or burning
- Chronic bloated feeling
- Excessive flatulence
- Heavy feeling in stomach

Acid/Enzyme Deficiency (Acute)

Indications:

Nausea or flu-like symptoms
Knotted feeling in stomach
Aging
Severe gas or bloating
Lack of hydrochloric acid

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Food Enzymes

Wasting (Chronic)

Indications:

Paleness
Anemia
Anorexia
Bulimia
Cold extremities
Frequent gas & bloating

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Spleen Activator

Liver Problems

General Indications:

- Allergies
- Skin Disorders (need to clean liver)
 - Hormone imbalances
- Emotional problems (depression)

Milk Thistle

Irritated (Hot)

Indications:

Bloating
Headaches/Migraines
Irritability
Flushing of face
Acne

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Liver Balance

Sluggish (Cold)

Indications:

Groggy feeling
Malaise
Discouragement
Chronic depression
Hormone imbalances
Body and foot odor

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Blood Build

CERTIFIED ADVANCED HERBALISM COURSE - SESSION 14 – QUESTION & ANSWERS

NAME: _____
ADDRESS: _____
PHONE: _____
FAX: _____
E-MAIL: _____

Please be sure to fill out the information above, complete the test and e-mail or fax it back to us at 425-955-4639 (US) or at +353 1 647 5705 (EU) or e-mail it to us at joyful@best.com (US) or at answers@med-herbs.com (EU). We will grade your question & answer session and will let you know if we have any questions or concerns.

1. What three things do our bodies produce to process proteins, carbohydrates and fats?
2. Where does most nutrient absorption take place?
3. Bile is produced by the _____ and stored in the _____.
4. What are some indications that this system is weak and may need nutritional aid?
5. Who can I help? List five people who exhibit the above indications and who may benefit from nutritional aid to the digestive system.
6. Experiment: Prepare two bowls with equal amounts of raw oats. Add equal parts of lukewarm water to each. To one bowl add three opened capsules of Proactazyme and stir. Wait about an hour and observe the difference. The oatmeal with Proactazyme should be liquefied, indicating that enzymes have reacted with it to break it down. Please write down your thoughts on this experiment. If you don't have Proactazyme use a powdered enzyme in capsule form.