What Makes Bile so Important?

As already mentioned, one of the liver's most important functions is to produce bile, about 1 to 1.5 quarts (0.95 - 1.4 liters) per day. Liver bile is a viscous, yellow, brown, or green fluid that at a pH of 9.5 is highly alkaline and has a bitter taste. Without sufficient bile, hydrochloric acid entering the small intestine from the stomach can cause burns throughout the gastrointestinal tract. Also, ingested foods remain undigested or only partially digested. For example, to enable the small intestine to digest and absorb fat and calcium from the food you eat, the food must first combine with bile.

When bile secretion is insufficient, fat is not absorbed properly. The undigested fat remains in the intestinal tract. When undigested fat reaches the colon along with other waste products, intestinal bacteria break down some of the fat into fatty acids or excrete it with the stool. Since fat is lighter than water, having fat in the stool may cause it to float. When fat is not absorbed, calcium is not absorbed either, leaving the blood in a deficit. The blood subsequently takes its extra calcium from the bones.

Most bone density problems (osteoporosis) actually arise from insufficient bile secretion and poor digestion of fats, rather than from not consuming enough calcium. Few medical practitioners are aware of this fact and, hence, merely prescribe calcium supplements to their patients without addressing the underlying reason for calcium deficiency.

Likewise, the body also requires fats to help digest and make use of proteins and carbohydrates. To digest these fats, the liver and gallbladder must release sufficient amounts of bile. Poor bile secretion leaves these foods largely undigested, which subjects them to decomposition by bacteria. Persistent abdominal gas, discomfort, and bloating are among the first indications to show that this important liver function has been seriously compromised.

Besides breaking down the fats in our food, bile also removes toxins from the liver. The liver is the most important organ of detoxification, and the health of every cell depends on how effectively it rids itself of these toxins.

As already mentioned in the introduction, the important bile constituents, bilirubin and biliverdin, possess significant antioxidant and anti-mutagenic properties. Higher concentrations of bile pigments in the...
body have been linked with reduced prevalence of cancer and cardiovascular disease.

One of the lesser-known but extremely important functions of bile is to deacidify and cleanse the intestines. Bile serves as the body's natural laxative. Constipation and sluggish bowel movements are the commonest consequences of impeded bile secretion.

When gallstones in the liver or gallbladder have critically obstructed bile flow, the color of the stool may be tan, orange-yellow, or pale as in clay, instead of the normal brown.

Gallstones are a direct product of an unhealthy diet and lifestyle. Even if someone has successfully dealt with all other causes of a chronic illness, if gallstones are still present in the liver or gallbladder, recovery may be short-lived or impossible.

Gallstones pose a considerable health risk and may lead to illness and premature aging. The following pages describe some of the main detrimental effects of gallstones on the different organs and systems in the body. When these stones are removed, the body as a whole can resume its normal, healthy activities.

**Disorders of the Digestive System**

The first part of the body affected by gallstones in the liver and gallbladder is the digestive system which can be compared to the root system of a plant or tree.

The alimentary tract of the digestive system maintains the following four main activities: ingestion, digestion, absorption, and elimination. The alimentary canal begins in the mouth; continues through the thorax, abdomen, and pelvic region; and ends at the anus (see Figure!). When you eat a meal, a series of digestive processes begin to take place. These can be divided into the mechanical breakdown of food through mastication (chewing) and the chemical breakdown of food through enzymes. These enzymes are present in the secretions produced by various glands of the digestive system.

Enzymes are minute chemical substances composed of proteins that cause or speed up chemical changes in other substances without themselves being changed. Digestive enzymes are contained in the saliva of the salivary glands of the mouth, the gastric juice in the stomach, the
intestinal juice in the small intestine, the pancreatic juice in the pancreas, and the bile in the liver/gallbladder.

Absorption is the process by which tiny nutrient particles of digested food pass through the intestinal walls into the blood and lymph vessels, which help distribute them to the cells of the body.

The bowels eliminate as feces whatever food substances they cannot digest or absorb, such as the plant fiber cellulose. Fecal matter also contains bile, which carries toxins and the waste products resulting from the breakdown (catabolism) of red blood cells. Bile contains bilirubin that is derived from these dead red blood cells and gives stool its naturally brown color.

In a healthy digestive system, about one-third of the excreted fecal matter is made up of dead intestinal bacteria. The rest of the fecal matter is composed of indigestible fiber and sloughed off intestinal lining. The body can function smoothly and efficiently only if the bowel removes these daily-generated waste materials every day. Otherwise, the body can become a cesspool of waste, and gradually begin to suffocate in it.
Figure 2: The digestive system
(Illustration by Mariana Ruiz Villarreal)
Tongue, Mouth, Lips, and Teeth

• The tongue is coated yellow or white, especially at the back: This indicates an imbalance in the secretion of bile, which is the major cause of digestive disorders. Toxic residues of undigested and fermented or putrefied food linger in the intestinal tract. This blocks lymph flow in the thoracic duct and prevents toxins and microbes in the throat and mouth area from being broken down and removed. Especially, fermenting bacteria, such as Candida albicans, thrive and proliferate in the coated layers of excretions on the surface of the tongue. There may also be a burning sensation and increased sensitivity.

• Teeth impressions on the sides of the tongue, often accompanied by white mucus discharge: This indicates poor digestion and inadequate absorption of nutrients from the small intestine.

• Pimples on the tongue: They are indicative of a compromised intestinal flora and excessive presence of fermenting and putrefying food in both the small and large intestines.

• Cracks on the tongue: These are signs of long-term intestinal trouble. When food is not being mixed with a sufficient amount of bile, it remains partially undigested. Undigested foods are subjected to bacterial putrefaction and, thereby, become a source of toxicity. Constant exposure of the intestinal wall to the toxins that these bacteria produce irritates and injures it. The resulting lesions, scars, and hardening of the intestinal walls is then reflected by the cracks on the tongue. There may be little or no mucus discharge on the tongue.

• Repeated mucus discharge into the throat and mouth: Intestinal congestion may cause bile, toxins and bacteria to back up into the stomach, thereby irritating its protective lining and triggering the secretion of excessive amounts of mucus. Some of this sticky material may reach the mouth area. This can create a bad (bitter) taste in the mouth and give rise to frequent attempts at clearing the throat, which sometimes involve coughing. Mucus discharge without this bitter taste results when food is not digested properly, and toxins are generated. The mucus helps to trap and neutralize some of these toxins, but as a side effect, it may lead to congestion in the chest, throat, sinuses and ears; and possibly, infections.
The Liver and Gallbladder Flush

Ridding the liver and gallbladder of gallstones is one of the most important and powerful approaches you can take to improve your health.

The liver and gallbladder flush requires 6 days of preparation, followed by 16 to 20 hours of actual cleansing. To remove gallstones, you will need the following items:

- **Apple juice** - six 32 oz. containers (6 x 1 liter) or **Sour/tart cherry juice** – six 8 oz. portions (6 x 240 ml) or choose from other alternatives listed under “Alternatives to Apple Juice or Sour Cherry Juice”
- **Epsom salt*** (or magnesium citrate) - 4 tablespoons (60 g) dissolved in 24 oz. (about 710 ml) of water**
- **Pure extra virgin olive oil**, 4 oz. (120 ml)
- **Fresh grapefruit** (pink is best) - enough to squeeze 6 oz. (about 180 ml) of juice or use the same amount of fresh lemon and orange juice combined***

* You can find Epsom salt in most drugstores or natural food stores. Some packaging labels describe it as a natural laxative, oral laxative, or for internal use. Do not use Epsom salt labeled not to be taken internally or for baths, since it contains impurities! If you cannot find Epsom salt, use magnesium citrate instead (same dosage, or if it comes in liquid form, take 3-4 fl. oz. (90-120 ml) at each of the four specified times).

** One tablespoon of Epsom salt equals 3 teaspoons of 5 grams each. The total amount of Epsom salt per tablespoon is 15 grams. Four tablespoons equal 60 grams. If your body weight is below normal, use a total of 40 grams; this amount will still give you frequent watery bowel movements necessary to help expel the released toxins and stones from the liver and gallbladder.

*** If you cannot tolerate grapefruit juice, you may use equal amounts of freshly squeezed lemon and orange juice instead. The effect is the same with either choice. For best results, use organically grown fruits.
Preparation

Drink 1 container of 32 oz. (1 liter) of packaged or freshly prepared apple juice (ideally from organically grown apples) or 8 oz. (240 ml) of unsweetened sour/tart cherry juice (see other options below) per day for a period of 6 days.

The malic acid in the apple juice or sour cherry juice softens the gallstones and makes their passage through the bile ducts smooth and easy. Sour cherry juice has about 4 times the concentration of malic acid that apple juice has, and is usually better tolerated by those who cannot deal with the large amount of sugar contained in apple juice.

Both apple juice and sour cherry juice have a strong cleansing effect. Some sensitive people may experience bloating and, occasionally, diarrhea, while on this much apple juice. While some of the diarrhea is actually stagnant bile, released by the liver and gallbladder (indicated by a brownish, yellow color), it may also be due to fermentation of the sugar in apple juice. If this becomes somewhat uncomfortable, you can dilute the apple juice with any amount of water, switch to sour cherry juice, or use any of the other options described later.

I found that apple juice and sour cherry juice are equally beneficial in preparing your liver and gallbladder for an effective flush.

Drink either of these juices slowly and in small portions spread throughout the day, between meals. You want to make sure there is a continuous supply of malic acid almost throughout the day, which is required to help soften the stones. Avoid drinking the juice during, just before, and in the first 1-2 hours after meals, and in the evening past 6 p.m. This is in addition to your normal daily water intake of 6 to 8 glasses.

Note: During Day 6 of the preparation, drink the entire amount of juice during the morning hours only.
What you need to know about apple juice:

- If you choose apple juice as your preparation method, use organic juice; freshly pressed apple juice from organic apples is ideal. Although for the purpose of the flush, any good brand of commercial apple juice, apple concentrate, or apple cider works well, too; commercially produced apple juice may contain high amounts of inorganic arsenic - a naturally occurring mineral that can be toxic in high concentrations.
- It may be useful to rinse your mouth out with baking soda and/or brush your teeth several times per day to prevent the acid from damaging your teeth. The same applies to the alternative options.
- Some people should not drink apple juice in the large quantities required for the liver flush. These include those who suffer from diabetes, hypoglycemia, yeast infection (Candida), cancer, and stomach ulcers.

What you need to know about sour/tart cherry juice:

- Tart cherries should not be confused with the sweet, black cherry variety.
- Sour cherries contain 4 times the amount of malic acid than found in apples. Hence, you only need a fourth of the quantity, i.e. 8 oz. cherry juice versus 32 oz. apple juice during each of the 6 days of the cleanse preparation.
- Make certain to only buy sour cherry juice in glass bottles! Most health food stores stock organic, preservative-free tart cherry juice.
- Studies suggest sour cherries may help reduce risk factors for type 2 diabetes, which makes tart cherry juice a good option for diabetics who wish to do the liver flushes and cannot use apple juice because of its high sugar content.
- The juice has also shown to help reduce inflammation of joints and inhibit tumor growth, improve blood flow, lower blood pressure, and increase heart and brain health.
- It can be used by those suffering from Candida problems.
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