Bile Salts

One of the many functions of a healthy liver is to secrete bile, normally between 600 and 1200ml/day. Bile serves two important functions: *First,* it is vital to fat digestion and absorption, not because of any enzymes in the bile that cause fat digestion, but instead because the bile acids perform two functions: 1. They emulsify the large fat particles in foods or oils into minute sizes that can be digested by the lipase enzymes coming from the pancreas, and 2. They aid in the transport and absorption of the digested fat end products to and through the intestinal lining. *Second,* bile serves as a means for excretion of several waste products from the blood. These include bilirubin an end product of red blood cell destruction and excesses of cholesterol synthesized by the liver cells.

Without the presence of enough bile salts in the intestinal tract, up to 40% of the fats are lost into the stools and the person often develops a deficiency due to this nutrient loss. Because Bile Salts are reabsorbed as they transit through the intestinal tract, it is possible to take supplemental bile salts to not only immediately improve fat digestion, transit time and fat-soluble vitamin absorption, but to also increase the quantity and quality of one's own Bile production. By increasing the quantity and quality of one's own bile production, one would be supporting better fat digestion, elimination and the dissolving of any pre-existing gallstones![1]

Control Gallstones & Excess Cholesterol

After being produced by the liver, bile is stored in the gallbladder. It is then secreted into the duodenum, the first section of the small intestine, where it breaks down fats and converts them into usable fatty acids.

Gallstones occur when cholesterol secretion is increased and/or bile acid secretion is decreased. Bile then becomes over- saturated with cholesterol. This sets the stage for stone formation. It is important to know however, that high blood cholesterol levels do not necessarily mean there will be high levels of cholesterol in the bile.

Bile's Important Functions:

- Emulsifies fats and fat-soluble vitamins A, D, E, K and the essential fatty acids alpha-linolenic acid (ALA) and linoleic acid (LA). They are essential for regular body functions, including aspects of brain and heart health.
- Removes excess cholesterol and bilirubin.
- Helps keep small intestines free from micro-organisms.
- Softens stool by promoting the addition of water into the stool.
- Carries toxins. The liver filters the toxins and dumps them into the bile. Bile then carries the toxins to the intestines, where they are absorbed by dietary fiber and excreted.

[1] Guyton, Textbook of Medical Physiology 8th Edition

- Acts as the body's own natural laxative, without causing loose stools.

Causes of Decreased Bile Production

As we age, bile production can decrease. Other factors that can cause a decrease in bile production include: oral contraceptive use, other drug use, viral Hepatitis and alcohol consumption.

Symptoms of Low Bile Levels

Symptoms that may be signs of low bile levels include constipation, poor digestion, gas, excess acid or headaches. These may also be signs of cholestasis, a condition where the excretion of bile is inhibited. This condition causes toxins to stay in the liver longer. Gallstones can be a major cause of cholestasis.

Risk Factors for Gallstones

An estimated twenty million people in the United States have gallstones. Women tend to be at a higher risk for gallstones - about 2.5 times more than men. Approximately 20% of American women and 8% of American men have gallstones.

GENDER: Women tend to be at greater risk than men because they have a higher cholesterol synthesis and estrogen decreases the production of bile. Pregnancy, as well as the use of oral contraceptives, and/or elevated estrogen levels dramatically increases the incidence of gallstones.

DIET: A diet high in refined carbohydrates (sugars), high in fat and low in fiber from fruits and vegetables leads to a reduction in bile acid synthesis by the liver and a lower bile acid concentration in the gallbladder. This combined with a high cholesterol diet can increase the risk of gallstones.

WEIGHT: Obesity causes an increased secretion of cholesterol in the bile and increases the synthesis of cholesterol. Therefore, obese individuals have a higher risk of gallstones. It is important to know, however, fasting or rapid weight loss causes initial increases in the concentration of cholesterol in the bile.

DISEASE: Bile is recycled by the body. About 94% of bile is reabsorbed in the ileum of the small intestine. Diseases such as Crohn's disease and cystic fibrosis can impair the reabsorption of bile acids, thus reducing the bile pool and the rate of bile secretion. Liver diseases such as Hepatitis or cirrhosis can also impair the liver from producing adequate amounts of bile.

AGE: Bile production decreases with age and therefore increases the risk of gallstone formation.

DRUGS: Oral contraceptives and estrogen therapy can increase gallstone risk. Some cholesterol-lowering drugs increase the risk of gallstones, by increasing the level of cholesterol in the bile.

LOW LECITHIN CONCENTRATION IN BILE: Lecithin is a phospholipid. It takes fifty molecules of pure bile salt micelles to enclose a single molecule of cholesterol, while only seven bile salt/phospholipid micelles are required to perform the same job. A food found to be high in lecithin is organic egg yolks.

Medical Therapy for Dissolving Gallstones! Cholesterol gallstones can be dissolved over a period of 1 to 2 years by consuming 1 to 1.5 grams of chenodeoxycholic acid daily.

Chenodeoxycholic acid is a bile acid. Bile acids are steroid acids found predominantly in bile of mammals. The distinction between different bile acids is minute, depends only on presence or absence of hydroxyl (OH) groups on positions 3, 7, and 12. Bile acids are physiological detergents that facilitate excretion, absorption, and transport of fats and sterols in the intestine and liver. Bile acids have been implicated in the regulation of all the key enzymes involved in cholesterol homeostasis.[2]

Therefore the 250 mg of sodium dehydrocholic acid contained in each capsule of Beyond the River Sales Bile Salts, would provide the same function as chenodeoxycholic acid. Being one of the naturally secreted bile acids in the body, by taking it supplementally it adds greatly to your pool of bile acids. This causes dissolution and reabsorption of the gallstones in the following ways: 1. The increased quantity of bile acids increases the volume of bile formed and therefore decreases the concentration of cholesterol in the bile. 2. The increase of bile acids in the bile makes the cholesterol that is present more soluble. 3. The outside administration of bile acids decreases the formation of bile acids by the liver, which at the same time reduces the secretion of cholesterol.[3]

Bile Salts by Beyond the River Sales

Each capsule provides 432 mg of bile salt extract NF, which is equivalent to 250mg of sodium dehydrocholic or deoxycholic acid. Each bottle contains 90 capsules. Suggested use: 1-2 capsules with meals that have fat in them, 1-3 times a day. If trying to dissolve gallstones over 1 to 2 years' time, you would need to take 4 to 6 capsules in divided dosages throughout the day.

To detoxify the liver faster, consider doing a liver gallbladder flush. We like to recommend using the method that incorporates using Phosphoric acid diluted in apple juice. Contact Synergistic Nutrition for instructions on how to do a Liver Gallbladder Flush.

[2] https://pubchem.ncbi.nlm.nih.gov/compound/Chenodeoxycholic-acid

[3] Guyton, Textbook of Medical Physiology 8th Edition