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Bile Salts

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The gall bladder stores and concentrates [bile](#) during the fasting state. The [gallbladder](#) has the capacity to hold 40-50ml of bile. Adult humans produce 400 to 800ml of bile daily. Typically, bile is concentrated five-fold in the gall bladder by absorption of water and small [electrolytes](#) - virtually all of the organic molecules are retained.

Secretion into bile is a major route for eliminating [cholesterol](#). Free cholesterol is virtually insoluble in aqueous solutions, but in bile, it is made soluble by bile acids and [lipids](#) like lecithin. In humans, roughly 500mg of cholesterol are converted to bile acids and eliminated in bile every day. [Gallstones](#), most of which are composed predominantly of cholesterol, result from processes that allow cholesterol to precipitate from solution in bile.

Bile contains bile acids, which are critical for digestion and absorption of fats and fat-soluble vitamins in the small intestine. Many waste products are eliminated from the body by secretion into bile and elimination in feces. Between 90 and 95% of bile acids are reabsorbed, mainly from the lower half of the small intestine, and undergo enterohepatic recirculation; small quantities occur in the stools and very little is normally excreted in the urine. It should be noted that liver disease can dramatically alter this pattern of recirculation - for instance, sick hepatocytes have decreased ability to extract [bile](#) acids from portal blood and damage to the canalicular system can result in escape of bile acids into the systemic circulation. Assay of systemic levels of bile acids is used clinically as a sensitive indicator of hepatic disease.

The most abundant bile acids in human bile are chenodeoxycholic acid (45%) and cholic acid (31%). These are referred to as the primary bile acids. Within the intestines the primary bile acids are acted upon by [bacteria](#) and converted to the secondary bile acids, identified as deoxycholate (from cholate) and lithocholate (from chenodeoxycholate).

In **normal** individuals, additional administration of moderate quantities of bile acids or salts by mouth has no demonstrable effect, since there are enough bile salts present in the intestinal [lumen](#) to carry out all the absorptive functions. If there is a deficiency of bile salts, administration may be beneficial. Bile salts may cause some stimulation of intestinal movement.

The daily output of bile acids ranged from 1 to 2.3gm daily; when stimulated by bile, the daily output was increased fourfold *Physiol. Rev.* 1941, 21: p.435.

Dehydrocholic acid is the most commonly employed of the bile acids for medicinal purposes. The dose range is 250 to 750mg [TID](#). The only contraindications listed are biliary obstruction and severe [hepatitis](#) (Martindale, 1972).

Deoxycholic acid administered orally in doses of 400 mg TID decreased appetite in four out of six patients *Lancet*, 1968, p.1066.

Two [grams](#) of ox bile salts were administered daily to a child of five years who had a congenital deficiency of bile salts, for a period of 11 months, with consequent improvement in fat absorption and no evidence of ill effects *Lancet*, 1955, p.1087.

Ox bile is often added as a component of digestive [aids](#) available from health food stores. Digest RC is a multiple [herbal](#) extract formulation which contains ox bile and was introduced in Europe over 45 years ago and today sells over 100 million doses annually.

Bile Salts can help with the following:

Diet

Not recommended for:

XXX [A Raw Food/Fruitarian Diet](#)

XXX [A Vegetarian Diet](#)

XXX [A Vegan Diet](#)

Digestion

W [Constipation](#)



Bile salts are often referred to as the body's natural laxative. In many cases constipation is a result of insufficient bile production. Bile salts can be obtained as a supplement, often in combination with digestive enzymes, and can be very effective for some people. For others, just taking a regular digestive enzyme without any bile salts in it is all that is needed.

Metabolic

W [Cystic Fibrosis](#)



Cystic fibrosis is associated with poor lipase secretion and, as a result, poor fat digestion. Pancreatic enzymes and bile salts may help.

Organ Health

W [Consequences of Gallbladder Surgery](#)



Once a gallbladder is removed it is important to be on bile acid supplements. They need to be taken with every meal in which fat is consumed otherwise your fats will not be properly emulsified and absorbed.

KEY

- W Likely to help
- W Highly recommended
- XXX Avoid absolutely

GLOSSARY

AIDS: Acquired Immune Deficiency Syndrome. An immune system deficiency disorder that suddenly alters the body's ability to defend itself. The AIDS virus invades the T4 helper/inducer lymphocytes and multiplies, causing a breakdown in the body's immune system, eventually leading to overwhelming infection and/or cancer, with ultimate death.

Bacteria: Microscopic germs. Some bacteria are "harmful" and can cause disease, while other "friendly" bacteria protect the body from harmful invading organisms.

Bile: A bitter, yellow-green secretion of the liver. Bile is stored in the gallbladder and is released when fat enters the first part of the small intestine (duodenum) in order to aid digestion.

Cholesterol: A waxy, fat-like substance manufactured in the liver and found in all tissues, it facilitates the transport and absorption of fatty acids. In foods, only animal products contain cholesterol. An excess of cholesterol in the bloodstream can contribute to the development of atherosclerosis.

Electrolyte: An element or compound that, when melted or dissolved in water or other solvent, breaks up into ions and is able to carry an electric current.

Gallbladder: A small, digestive organ positioned under the liver, which concentrates and stores bile. Problems with the gallbladder often lead to "gallbladder attacks", which usually occur after a fatty meal and at night. The following are the most common symptoms: steady, severe pain in the middle-upper abdomen or below the ribs on the right; pain in the back between the shoulder blades; pain under the right shoulder; nausea; vomiting; fever; chills; jaundice; abdominal bloating; intolerance of fatty foods; belching or gas; indigestion.

Gallstone: (Biliary Calculus): Stone-like objects in either the gallbladder or bile ducts, composed mainly of cholesterol and occasionally mixed with calcium. Most gallstones do not cause problems until they become larger or they begin obstructing bile ducts, at which point gallbladder "attacks" begin to occur. **Symptoms** usually occur after a fatty meal and at night. The following are the most common ones: steady, severe pain in the middle-upper abdomen or below the ribs on the right; pain in the back between the shoulder blades; pain under the right shoulder; nausea; vomiting; fever; chills; jaundice; abdominal bloating; intolerance of fatty foods; belching or gas; indigestion.

Gram: (gm): A metric unit of weight, there being approximately 28 grams in one ounce.

Hepatitis: Inflammation of the liver usually resulting in jaundice (yellowing of the skin), loss of appetite, stomach discomfort, abnormal liver function, clay-colored stools, and dark urine. May be caused by a bacterial or viral infection, parasitic infestation, alcohol, drugs, toxins or transfusion of incompatible blood. Can be life-threatening. Severe hepatitis may lead to cirrhosis and chronic liver dysfunction.

Herbs: Herbs may be used as dried extracts (capsules, powders, teas), glycerites (glycerine extracts), or tinctures (alcohol extracts). Unless otherwise indicated, teas should be made with one teaspoon herb per cup of hot water. Steep covered 5 to 10 minutes for leaf or flowers, and 10 to 20 minutes for roots. Tinctures may be used singly or in combination as noted. The high doses of single herbs suggested may be best taken as dried extracts (in capsules), although tinctures (60 drops four times per day) and teas (4 to 6 cups per day) may also be used.

Lipid: Fat-soluble substances derived from animal or vegetable cells by nonpolar solvents (e.g. ether); the term can include the following types of materials: fatty acids, glycerides, phospholipids, alcohols and waxes.

Lumen: Space in the interior of a tubular structure.

Milligram: (mg): 1/1,000 of a gram by weight.

TID: Three times a day.