

# Bile Acid Factors™

Enhances Digestion and Absorption of Fats and Fat Soluble Nutrients



- **Highly Concentrated Conjugated Bile Acids**
- **Improves the Assimilation of Fats and Other Fat-Soluble Nutrients**
- **Supports Intestinal Peristalsis for Improved Regularity**
- **Reduces Fat-Related Digestive Problems**
- **Promotes Intestinal Health by Bolstering the Defense Against Unwanted Microorganisms**

## Who Might Benefit From Bile Acid Factors?

**Bile Acid Factors** is designed for those who may not be secreting adequate amounts of bile. As a result of improper diet and lack of physical activity, this group of people is larger than would otherwise exist. Nevertheless, advancing age can lead to a reduction in digestive enzymes in almost everyone. Individuals who have had their gallbladders removed can clearly benefit from **Bile Acid Factors**. Another group of people with great need for **Bile Acid Factors** are those who do not have sufficient bile acid reabsorption (or enterohepatic circulation) from the small intestines as a result of small intestine resection surgery. Clinical trials within this group have demonstrated the effectiveness of bile acid supplementation in improving fat absorption and nutritional status.

## Usage and Safety

Take 1-3 capsules with a meal containing fat, or as recommended by your qualified healthcare professional. **Bile Acid Factors** consists of a mixture of highly concentrated bile acids (also called bile salts), mostly in the conjugated form, from U.S. and/or New Zealand bovine/ovine bile. These sources are closely monitored for safety and purity and processed in a licensed, pharmaceutical facility.

## References

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### Supplement Facts

Serving Size 3 Capsules		Servings Per Container 30	
	Amount Per 3 Capsules		% DV
Total Bile Acids	1000 mg		*
(from 1530 bovine/ovine bile concentrate)			
Conjugated Bile Acid	945 mg		*
(as glycocholic acid, taurocholic acid, glycodeoxycholic acid, taurodeoxycholic acid, glycochenodeoxycholic acid and taurochenodeoxycholic acid)			
Unconjugated Bile Acid	55 mg		*
(as cholic acid and deoxycholic acid)			

\* Daily Value not established.

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## The Absorption of Fats & Fat-Soluble Nutrients

Essential fatty acids and other fat-soluble nutrients are among the most important elements in the diet to people of all ages. The omega-3 fatty acids docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) and the omega-6 fatty acid gamma-linolenic acid (GLA) are often supplemented in the diet because of their importance for maintaining the health of the brain, the immune system and the cardiovascular system. Similarly, many individuals take supplemental coenzyme Q-10, vitamin E, tocotrienols, lycopene and other fat-soluble nutrients for antioxidant protection and related health concerns. Unfortunately, the capacity of the body to properly digest and absorb such nutrients declines with age or certain less-than-optimal physiological conditions. At least in part, this is due to changes in the body's ability to produce and metabolize bile acids.

## What are Bile Acids?

Bile acids are the main active components of bile. Bile refers to the fluid produced by the liver and secreted into the small intestine from the gall bladder via the bile duct. Bile salt is a synonymous term for bile acid, and the two are often used interchangeably.

Bile acids are present in two forms, conjugated and unconjugated. Conjugation in this instance simply means "bound to another substance." With the bile acids, the binding substances are the amino acids taurine and glycine. The conjugated bile acids found in **Bile Acid Factors™** include glycocholic acid, taurocholic acid, glycodeoxycholic acid, taurodeoxycholic acid, glycochenodeoxycholic acid and taurochenodeoxycholic acid. The unconjugated bile acids are cholic acid and deoxycholic acid. Indeed, bile acids are not toxic in

the biliary tree or intestine in healthy individuals due to the fact that this is prevented by the co-secretion of phosphatidylcholine.

In a healthy person, bile acid synthesis is about 400 mg/day. However, bile acid secretion – the amount of bile released by the gallbladder – is about 12,000 mg (12 grams) per day because of the conservation of the secreted bile acids by active reabsorption in the small intestine. As a consequence of this active reabsorption, a bile acid "pool" is formed that circulates multiple times daily. This gives an idea of how important bile acids are in the normal metabolism of the gastrointestinal tract. A few major points regarding bile acids are as follows:

- Bile acids are produced in the liver and then stored and concentrated in the gallbladder, from which they enter the small intestines via the bile duct.
- In the small intestine, bile acids solubilize fats to aid their absorption.
- Bile acid deficiency causes fat malabsorption and fatty stools (steatorrhea) as indicated by diarrhea. In addition, bile acid deficiency jeopardizes a person's nutritional status by reducing the absorption of fat and fat-soluble nutrients.
- Conjugated bile acids have been shown in clinical trials to be effective in improving fat absorption and the nutritional status of individuals.
- Conjugated bile acids have greater efficacy and tolerability than the non-conjugated bile acids. The importance of conjugation is well-established. For instance, when unconjugated cholic acid is administered, it is immediately conjugated with taurine or glycine in the liver. Similarly, it is the conjugated forms of the bile acids which are present in the active micellar phase of digestion of fats in the small intestine.

**Bile Acid Factors** was developed under the supervision of Alan F. Hofmann, M.D., Professor of Gastroenterology,

and one of the world's leading authorities on bile replacement therapy.

## Regularity, Fatty Stool, Parasites

The small intestine consists of the duodenum, the jejunum and the ileum. The duodenum is the first 10 or 12 inches of the intestine which attaches to the stomach and is responsible for much of the absorption of minerals. It is also the site where many of the other digestive enzymes are secreted. These include the proteases trypsin and chymotrypsin, and the starch digestives amylase and saccharidase. Bicarbonates are released that neutralize acid and bring the contents of the intestine to a mildly alkaline state.

The second portion of the small intestine, the jejunum, is some 8 feet in length and is the site of absorption of water-soluble vitamins, proteins and the carbohydrate fractions of foods. The final portion of the small intestine, the ileum, is some 12 feet long and is responsible for the absorption of fats, fat-soluble compounds and the excretion of bile salts.

The liver produces about 1 quart of bile each day. This is one indication that bile is important in the digestion of fats and fat-soluble nutrients. However, bile does other things as well. For instance, it softens the stool and encourages peristalsis, thus improving the movement of the digested food mass through the gastrointestinal tract. Diets that are high in soluble and semi-soluble fibers work with the liver to trap the bile in a form which will not be too quickly reabsorbed by the system. Furthermore, bile is one of the body's chief weapons against the colonization of parasites in the intestines.

**NOTE:** If constipation is one hazard of inadequate bile production and/or inadequate bile release, diarrhea, paradoxically, is another. Malabsorption of fats found in the diet, as already indicated, can induce fatty, hence loose stools. Maintaining the proper levels of bile therefore tends to lead to improved regularity. However, excess intake of **Bile Acid Factors** can cause loose stools and even diarrhea. Do not exceed the intake recommended on the label or by your health care practitioner.