biotin basics

Extra biotin may be beneficial in a variety of ways—from lowering high triglycerides to building strong, beautiful nails

By Jack Challem

THE BASICS: A little-known member of the B-complex family of vitamins, biotin plays an essential role in regulating insulin, blood sugar, and the metabolism of fats and protein. It is often recommended to lower blood sugar and triglycerides. It may also improve brittle fingernails.

ALIAS: Biotin is occasionally referred to as vitamin H or vitamin B7.

HOW BIOTIN WORKS: Biotin works in several different and fundamental ways. First, it activates genes involved in regulating insulin and blood sugar, as well as immunity. Second, biotin is needed to make four key enzymes called carboxylases. These enzymes are involved in the metabolism of fats, the conversion of protein and fat to glucose, and the utilization of leucine (an essential amino acid). Third, biotin is needed for the production of normal skin and fingernail cells.

HEALTH BENEFITS: Extra biotin supplements may be beneficial in a variety of circumstances. Here’s a look:

• Blood sugar balance. Biotin activates the gene responsible for glucokinase, an enzyme that functions as a “glucose sensor” in the pancreas. When blood sugar levels rise, glucokinase signals the pancreas to secrete more insulin. Without adequate biotin, the body cannot make glucokinase. People with diabetes and other forms of glucose intolerance are often deficient in biotin, and blood sugar disorders are often helped with large amounts of biotin. Some supplements combine biotin with either chromium or alpha-lipoic acid to help lower blood sugar.

• Triglyceride control. This blood fat is a risk factor for heart disease. In a study of people with type 2 diabetes, large amounts of supplemental biotin significantly reduced triglyceride levels in less than one month. People without diabetes had modest reductions in triglycerides.

• Immune boost. Biotin is essential for normal immunity. It activates several genes involved in normal immune function, resulting in increased levels of interleukin-1 beta, interferon-gamma, and interleukin-4.

• Healthy pregnancy. Biotin breaks down more rapidly in pregnancy, and mild biotin deficiencies are common during pregnancy. Animal studies have found that biotin deficiency can lead to birth defects. Although the chance of birth defects in biotin-deficient women has not been confirmed, the risk does concern some researchers. Supplementation with a vitamin supplement or prenatal supplement should reduce the likelihood of such a deficiency.

Product Examples

Natural Factors Biotin offers 300 mcg of biotin per tablet, with 90 tablets per bottle.

Hypoallergenic and suitable for vegetarians, Source Naturals Biotin tablets contain 600 mcg or 5 mg per tablet.

Country Life Biotin, with 5 mg per serving, is another high-potency and vegetarian source of the vitamin.
• Strong nails and hair. Biotin has been successfully used to treat brittle fingernails. In a study of 32 women, supplemental biotin increased nail thickness by 25 percent and also reduced splitting. Other studies have found similar benefits from biotin supplementation. Anecdotal findings support the use of high-potency biotin supplements for thinning hair and hair loss, particularly in women.

BACKGROUND CHECK: The officially recommended amount of biotin is a scant 30 mcg daily. The vitamin is exceptionally safe and has been given in amounts up to 200,000 mcg (200 mg) without side effects. One study found that at doses of 20,000 mcg (20 mg), all supplemental biotin is absorbed.

GLEANINGS: People who take anticonvulsant medications, such as valproic acid and phenobarbital, often have low biotin levels. Similarly, people who take large amounts of alpha-lipoic acid (an antioxidant) for long periods may have lower activity of biotin-dependent enzymes. In all of these cases, supplemental biotin should normalize biotin activity.

HEADS UP: Raw egg whites contain the protein avidin, which binds to biotin and prevents its absorption. Heating egg whites inactivates the protein.

WHAT YOU SHOULD TAKE: For reducing blood sugar levels, try 9,000-16,000 mcg (9-16 mg) of biotin daily. You can reduce this amount to 1,000-3,000 mcg (1-3 mg) daily by combining biotin with chromium or alpha-lipoic acid, both of which are helpful for balancing blood sugar. Reduction of triglycerides may require 15,000 mcg (15 mg). For brittle fingernails, try 2,500 mcg (2.5 mg) daily.

A HELPING HAND FOR PREDIABETES
Susan, 46, had recently been diagnosed as prediabetic. She also suffered from brittle fingernails. Was there a connection between these two seemingly disparate conditions?
She began taking alpha-lipoic acid, chromium, and silymarin (from milk thistle) to regulate insulin and lower blood sugar levels. After several months, her blood sugar decreased to almost normal levels, but she was still frustrated by brittle, splitting fingernails.
After turning to a nutritionally oriented physician for advice, Susan added 5,000 mcg (50 mg) of biotin daily. After several months, her blood sugar continued to improve, her triglyceride levels declined further, and her fingernails were stronger and stopped splitting. She credits biotin supplements with improvements in her blood sugar—and her fingernails.