

## Vitamin B7 // Biotin

### AT A GLANCE

#### Introduction

Vitamin B7, also called biotin, vitamin H or vitamin B8, is a colorless, water-soluble member of the B vitamin group. There are eight different forms of biotin, but only one of them – D-biotin – occurs naturally and has full vitamin activity. Biotin can only be synthesized by bacteria, molds, yeasts, algae, and by certain plant species.

#### Health Functions

A sufficient intake of biotin is important as it helps the body to

- convert food into glucose, which is used to produce energy
- produce fatty acids and amino acids (the building blocks of protein and lipids, respectively)
- activate protein/amino acid metabolism in cells
- regulate expression of genes involved in protein and fat metabolism

The European Food Safety Authority (EFSA), which provides scientific advice to assist policy makers, has confirmed that clear health benefits have been established for the dietary intake of biotin (vitamin B7) in contributing to:

- normal macronutrient metabolism;
- normal energy yielding metabolism;
- the maintenance of normal skin and mucous membranes;
- the normal function of the nervous system;
- the maintenance of normal hair.

#### Disease Risk Reduction

##### **Birth defects**

Although there is no direct evidence that marginal biotin deficiency causes birth defects in humans, an adequate biotin intake/supplementation during pregnancy is advisable.

#### Other Applications

*Please note:*

*Any dietary or drug treatment with high-dosed micronutrients needs medical supervision.*

##### **Multiple Sclerosis**

Preliminary study results suggest that supplementation of high biotin doses may achieve a sustained reversal of progressive MS-related disability.

### **Diabetes**

Some preliminary study results indicate that biotin supplementation might improve blood sugar control in people with type 2 diabetes.

### **Hair and nail problems**

Small studies suggests that biotin supplements may improve thin, splitting, or brittle toe/fingernails and hair. However, larger trials are needed to assess the efficacy of biotin. To date, there are no published scientific studies that support a preventive effect of biotin in hair loss.

### **Cradle cap**

Infants who don't have enough biotin often develop a scaly scalp condition. To date, only individual reports indicate that biotin supplements might be effective in treating this condition.

### **Intake Recommendations**

While in Europe a biotin reference value for adults of 40 micrograms (mcg)/day has been established, in the U.S. the adequate intake level for adults has been set at 30 mcg biotin per day.

### **Supply Situation**

National nutrition surveys have shown that the estimated daily intakes of biotin in most people meet the recommendations.

### **Deficiency**

Vitamin B7 deficiency is extremely rare, which is probably due to the fact that biotin is synthesized by beneficial bacteria in the human digestive tract.

Groups at risk of biotin deficiency include patients maintained on total intravenous nutrition, , patients with an impaired uptake of vitamins from food or certain liver diseases, and patients with inborn errors of biotin metabolism related enzymes. In addition, pregnancy may be associated with marginal biotin deficiency.

Symptoms include hair loss, dry scaly skin, cracking in the corners of the mouth, depression, lethargy, hallucination, numbness and tingling of the extremities, and ataxia..

### **Sources**

The richest sources of biotin are yeast, liver and kidney. Egg yolk, soybeans, nuts and cereals are also good sources. 100 g liver contains approximately 100 mcg biotin, whereas most other meats, vegetables and fruits only contain approximately 1 mcg biotin /100 g.

### Safety

No known toxicity has been associated with biotin.

### Drug interactions

*Please note:*

*Because of the potential for interactions, dietary supplements should not be taken with medication without first talking to an experienced healthcare provider*

Individuals on long-term anticonvulsant (anti-seizure) therapy and antibiotics may have reduced blood biotin levels.

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