

WATER - SOLUBLE VITAMINS: VITAMIN B7 (BIOTIN)

Patient Resource



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Functions of Biotin

Other names for Biotin

- Vitamin B7
- Vitamin H

- **Regulation of**
 - cell signals
 - genetic activity
- **Helps break down**
 - fats
 - carbohydrates
 - proteins
- **Aids in organ function**
 - skin
 - eyes
 - liver
 - nervous system

Sources of Biotin

Animal Sources



- Beef Liver
- Dairy products
- Eggs (cooked, not raw)
- Fish (i.e. salmon)
- Pork

Plant Sources



Fruits & Vegetables

- Avocados
- Bananas
- Broccoli
- Mushroom
- Spinach
- Sweet Potatoes

Grains

- Oats
- Rice
- Wheat

Nuts & Seeds

- Almonds
- Peanuts
- Sunflower seeds

Other Sources

- Gut bacteria ("good" bacteria in the intestines)
- Breast milk



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How stable is Biotin?

- Good stability in foods
- Excellent stability in dry products
- Losses occur in the processing of evaporated and powdered milk
- Losses in some pharmaceutical products
- Destroyed by UV
- Unstable in strong acids

The Bottom Line

Whole grains, fruits, vegetables, and nuts and seeds are great options for getting more biotin in your diet. These foods are typical of an overall healthy diet as well, and contain many of the other B-vitamins and nutrients the body needs.

Processing and pharmaceutical products, such as supplements, can lose biotin content. It's important to try and get your biotin from foods first before supplementing, and it's always a good idea to check the expiration date on supplements.

Supplementation & Toxicity

Even with high intakes, biotin has not been shown to be toxic to humans. Excess amounts of this vitamin leave the body through the urine, since biotin is a water-soluble vitamin.

Potential Side Effects

There is not a toxic limit or upper limit (UL) established for biotin, and most people report tolerating biotin supplements well. However, some people report having **nausea, cramping, diarrhea, or digestive discomfort** associated with biotin supplementation.

Hair & Nail Health

The majority of research finds that people taking biotin had an underlying cause for poor hair or nail growth that wasn't a biotin deficiency.

However, most cases also show improvement upon supplementation.

This means that eating a balanced diet to meet biotin needs, and supplementing **under proper medical supervision**, may cause improvements in overall health.



SUPPLEMENTATION & TREATMENT

Uses

Supplemental biotin can be prescribed, **under appropriate medical direction and supervision**, following medical diagnosis and prescription, for the following:

- dermatological conditions (i.e. acne)
- hypoglycemia
- hyperlipidemia
- glucose control

If you have these conditions, be sure to ask the advice of your doctors and healthcare team before supplementing.

Potential Interactions

Excess biotin **can produce a false positive in lab tests for thyroid disease**. Be sure to mention to your healthcare team any supplements you take, especially if thyroid conditions are likely to be the diagnosis.

The Bottom Line

Although most people are likely meeting their biotin needs, biotin supplements are generally well-tolerated and may be recommended by your healthcare provider for specific conditions.



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Dietary Reference Intakes

The amount of biotin recommended for daily intake is **based on the Adequate Intake (AI)** level. This is the level assumed adequate to meet nutritional needs. An AI is established when there is not enough evidence for a Recommended Dietary Allowance, or RDA. A chart showing recommended intakes is included on the following page.

Helpful Terms to Know


- **Recommended Dietary Allowance (RDA):** covers the needs of 97-98% of individuals in a group; the average amount of a nutrient a healthy person should consume daily. Vary by gender, age, and whether a woman is pregnant or breastfeeding. Developed by the Food and Nutrition Board at the Institutes of Medicine (IOM) of the National Academies.
- **mcg** = micrograms
- **Adequate Intake (UL):** recommended daily intake of a nutrient; established by Institute of Medicine (IOM) to meet or to exceed the needed amount to maintain adequate nutrition for most people in a particular stage of life or gender group; established when not enough evidence is available to determine the RDA

Deficiency

Populations Particularly Prone to Deficiency



*Individuals
with
alcoholism*



*Individuals
who smoke*



*Pregnant
women*



Other

- Congenital lack of biotinidase
- Inflammatory bowel disorders
- Antibiotics or other medications
- High intakes of **avidin**

About Avidin

Avidin is a protein found in the following foods:

- Raw eggs
- Mayonnaise
- Caesar dressing
- Eggnog

If you regularly eat these foods in high amounts, you might want to reconsider. This can result in biotin absorption in the gastrointestinal (GI) tract being prevented.

When you cook eggs, avidin is broken down by the heating process. Cooked eggs can be a great source of biotin, so if you are looking to up your biotin intake it might be worth the switch from raw eggs to cooked.

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Dietary Reference Intakes, continued from previous page.

Adequate Intake (AI) for Vitamin B7 in mcg/day	
Infants	
0-6 months	5
7-12 months	6
Children	
1-3 years	8
4-8 years	12
Adults	
9-13 years	20
14-18 years	25
19-70+ years	30
Pregnancy	
14- 50 years	30
Lactation	
14-50 years	35

Image created by ANNI WEEKS. Based on Dietary Reference Intakes (DRIs): Recommended Dietary Allowances and Adequate Intakes, Vitamins. Food and Nutrition Board, Institute of Medicine, National Academies.

Biotin Deficiency During Pregnancy

According to recent studies, biotin is broken down at an increased rate during pregnancy. Marginal deficiency, in other words mild or slight deficiencies, **occur in 50% of cases** despite having a normal dietary intake.



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VITAMIN B7 (BIOTIN) *deficiency*



neuromuscular dysfunction

And other symptoms, such as **brittle nails**.



alopecia

- Thinning hair



dermatitis

Scaly rash on areas around

- eyes
- nose
- mouth

Signs & Symptoms of Deficiency

Brittle nails, scaly rashes, and thinning hair are signs of a biotin deficiency. Since biotin is involved in so many functions of the body, **high cholesterol or heart problems** may also indicate a deficiency. Remember, deficiency of biotin is rare and research has not promoted biotin use to restore hair loss, nail health, or skin health.

NOTE:

It can be helpful to bring in your supplements to a doctor's visit or your next appointment with your healthcare providers. Providing the actual containers of products you take can help your healthcare team to avoid under- or over-dosing you or your family members on supplements. It is also a helpful practice since there are many B vitamins and their variants can go by different names.

