

Get the facts about Biotin

What is biotin?

Biotin is a water-soluble B-vitamin (B7) that is integral to energy and metabolism (gluconeogenesis, fatty acid synthesis, and carbohydrate utilization).¹

Why has biotin intake increased?

Biotin has gained increasing popularity as an over-the-counter supplement and is commonly included in multivitamins and beauty products marketed for hair and nails.²⁻⁶ Many of these hair-and-nail vitamins include biotin at concentrations up to 100 times the Dietary Reference Intake (e.g., 3000 µg); some report as much as 10,000 µg.² In addition, clinicians may prescribe biotin supplementation to help prevent biotin deficiency in pregnancy⁷⁻⁸ or to reduce leg cramps in dialysis patients.⁹ Clinicians may also prescribe high doses of biotin for multiple sclerosis, inborn metabolic disorders, and mitochondrial energy disorders.^{9,10-15}

What is the Dietary Reference Intake for biotin?

The Dietary Reference Intake (DRI), or adequate intake in the case of biotin, is age-dependent. In adults, the adequate intake is 30–70 µg/day.^{1,16-18} This corresponds to an adult reference range of approximately 0.12–0.54 ng/mL,¹⁹ depending on the population from which the reference interval was derived.

In what foods is biotin found?

Meats and Poultry

- Beef Liver
- Hamburger
- Pork Chop
- Egg

Fish

- Salmon
- Tuna

Dairy

- Milk (2%)
- Yogurt (Plain)

Fruits and Vegetables

- Sweet Potato
- Spinach
- Broccoli
- Banana
- Apple

Nuts and Grains

- Sunflower Seeds
- Almonds
- Oatmeal
- Bread (Whole Wheat)

What is the potential risk of biotin interference with clinical laboratory tests?

- Multiple manufacturers use a streptavidin biotin complex in many of their immunoassays. Advantages of this complex include its high binding affinity, adaptability for binding antigen or antibody, and ability to readily attach to a solid phase (such as a microbead).
- Supra-physiological doses of biotin ingested for either cosmetic or pharmacologic use can result in serum concentrations as high as 1160 ng/mL ($\mu\text{g/L}$) 1 hour after a single oral biotin dose of 300 mg.²⁰
- Biotin interference can cause either falsely depressed or falsely elevated patient test results.

How long does it take after biotin use is discontinued for a patient's biotin to reach a level that does not impact results?

The time after last use required for a patient's biotin to reach a level that does not impact results depends on a variety of factors including, but not limited to, dose, duration of use, clinical conditions, age, and the half-life of biotin in the serum.

- For a single oral biotin dose of approximately 600 μg , which is greater than DRI, the half-life has been reported as less than 2 hours.²¹
- More recently, the half-life for single oral biotin doses between 100–300 mg (100,000–300,000 μg) has been shown to vary between 8–19 hours.¹²⁻¹³
- For individuals ingesting mega-doses of biotin, up to 300 mg/day, serum concentrations as high as 1160 ng/mL have been observed.¹⁴

References:

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Ask your patients:

- Are you currently taking a multivitamin that includes biotin?
- Are you currently taking a hair, skin, and nail supplement?
- Are you currently taking biotin as part of a therapeutic regimen?

Ask your clinical laboratory provider:

- What other interferents may impact patient results?

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