

Biotin

Vitamin B7, vitamin H — water-soluble B-complex vitamin, sold as d-biotin

Biotin is the rare supplement whose principal risk is not to the person taking it but to the accuracy of their medical care. A 2026 systematic review found no consistent benefit for hair growth outside documented deficiency, while typical over-the-counter doses run 165–330 times the adequate intake and are high enough to distort laboratory tests for thyroid disease and heart attack.

SUMMARY TABLE

Attribute	Summary
Primary uses	Correcting genuine deficiency (rare) and biotinidase deficiency; modest evidence for brittle nails. Marketed for hair, skin and nail growth in healthy people, where evidence does not support it.
Evidence strength	Strong for treating documented deficiency. Weak for brittle nails (3 small studies). Essentially absent for hair growth in non-deficient people — a 2026 review of 10 studies found no consistent benefit.
Effective dose	Adequate Intake is 30 mcg/day. Retail hair supplements typically supply 5,000–10,000 mcg. Brittle-nail studies used 2.5 mg/day.
How to take	Plain d-biotin capsule/tablet at a modest dose, if supplementing at all. Avoid mega-dose gummies and multi-ingredient hair/skin/nail blends, which make any effect unattributable.
Time to effect	In deficiency, hair/skin changes improve over months; brittle-nail thickness changes took 6–15 months in trials. No effect expected if not deficient.
Serious risks	Laboratory assay interference is the dominant risk: false-low troponin (masking a heart attack) and false-abnormal thyroid results. A single 10 mg dose has interfered with thyroid tests within 24 hours; FDA has issued formal warnings.
Who should avoid it	No one is harmed by biotin itself, but anyone being evaluated for thyroid disease, chest pain, a hormone abnormality, or on cancer-marker surveillance should stop it before bloodwork.
Quality markers	Modest, clearly stated d-biotin dose; USP/NSF verification; single-ingredient rather than a proprietary beauty blend; no unsupported hair-regrowth claims.

A LOGICAL ERROR AT THE CENTER OF THE CATEGORY

Biotin deficiency can cause hair loss; it does not follow that hair loss indicates biotin deficiency, or that supplementing a person with normal status will grow hair. The Adequate Intake is 30 mcg/day, and severe deficiency is rare in people eating an ordinary diet — genuine risk is confined to biotinidase deficiency, chronic heavy alcohol use, and long-term anticonvulsant therapy.

THE HAIR EVIDENCE, ASSEMBLED

A 2026 systematic review (10 studies, 9 countries, 10–541 participants) found biotin monotherapy showed no consistent benefit on objective hair-growth outcomes; where improvement appeared, it occurred within multi-component regimens that make attribution to biotin impossible. A separate review found supportive evidence only for documented deficiency or specific conditions (uncombable hair syndrome, biotinidase deficiency, isotretinoin- or valproic-acid-induced alopecia).

THE ASSAY INTERFERENCE PROBLEM

Many modern immunoassays use biotin-streptavidin binding chemistry; excess circulating biotin competes in these assays and skews results. The FDA has warned that biotin can cause falsely low troponin — the test used to diagnose a heart attack — and falsely abnormal thyroid panels mimicking Graves disease at doses of 10–300 mg. The practical rule: disclose biotin use to every clinician ordering blood tests, and stop it 48–72 hours before non-urgent testing.

BOTTOM LINE

For a healthy adult eating a normal diet, biotin supplementation has no demonstrated benefit for hair, skin or nails, and typical retail doses serve no identified purpose. It will not hurt you directly, but it can meaningfully degrade the accuracy of your medical testing. Worth taking only for physician-directed deficiency or brittle nails (2.5 mg/day, the studied dose); for anyone who does take it, disclosure before bloodwork is non-negotiable.

SOURCES

1. "Effectiveness of Biotin Supplementation for Hair Growth in Patients with Alopecia." *Dermato*, 2026.
2. NIH Office of Dietary Supplements. "Biotin — Fact Sheet for Health Professionals."
3. "Biotin for Hair Loss: Teasing Out the Evidence." *J. Clin. Aesthetic Dermatol.*
4. "Biotin Supplements for Hair and Nail Regrowth: A Caution for Oncologists." *JCO Oncology Practice*, 2025.

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