

# BIOTIN INTERFERENCE: APPARENT HYPERTHYROIDISM DUE TO A COMMON OVER-THE-COUNTER MEDICATION



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## INTRODUCTION

- > Biotin (vitamin B7) is a common over-the-counter medication marketed as a supplement for hair and nail growth.
- > It is not widely known that biotin interferes with thyroid function assays.
- > This can lead to mismanagement and potential harm to patients.

## CASE DESCRIPTION

An 81-year-old female with a 64-year history of previously well-controlled hypothyroidism presented via telemedicine to her primary care physician following routine thyroid function tests.

- > Thyroid function test results:
  - TSH 0.024 u[IU]/mL (low)
  - Free T4 2.9 ng/dL (high)
- > TSH and free T4 were within normal limits over the prior two years while on a stable dose of levothyroxine 150 mcg daily.
- > Vital signs and physical exam were unremarkable.
- > Levothyroxine was decreased from 150 mcg to 75 mcg and she was referred to endocrine clinic.

## CASE DESCRIPTION (cont.)

In endocrine clinic, the patient denied any symptoms of hyperthyroidism, however, disclosed the recent initiation of biotin for hair and nail health.

- > The supplement contained 5,000 mcg of biotin, nearly 10,000% of the daily recommended dose.
- > The patient was asked to discontinue biotin for one week prior to repeat labs.
- > Repeat labs revealed a normal TSH of 4.45 u[IU]/mL and free T4 of 0.8 ng/dL.
- > Levothyroxine was increased to her original dose of 150 mcg daily.
- > Repeat thyroid function tests 2 months later, with discontinuation of biotin one week prior to testing, were also within normal limits.



## DISCUSSION

- > Biotin can interfere with thyroid function immunoassays.
- > This leads to falsely low TSH levels, elevated free T4 and the erroneous diagnosis of hyperthyroidism.
- > This case illustrates the potential for patient harm due to an unnecessary decrease in levothyroxine.

## CONCLUSIONS

- > Providers should routinely ask patients about the use of biotin prior to thyroid function testing.
- > Increasing awareness of biotin's interference with thyroid function assays help providers:
  - Properly identify and manage unexpected results
  - Avoid unnecessary diagnostic testing
  - Ensure appropriate treatment for thyroid dysfunction

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