

**HOT, HERBAL DRINK MASKING HYPOTHYROIDISM, UNKNOWN LABORATORY INTERFERENCE WITH FENUGREEK AND CORIANDER SEEDS: A RARE PRESENTATION OF SEVERE HYPOTHYROIDISM**

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**Abstract**

This case report highlights a unique instance in which the use of a hot, herbal drink made from fenugreek and coriander seeds interfered with laboratory thyroid function tests (TFTs), masking hypothyroidism. A 50-year-old female presented with generalized fatigue and symptoms suggestive of hypothyroidism, but initial TFTs indicated uncharacteristic results, suggesting central hyperthyroidism. Further inquiry revealed the nightly self-administering of an herbal drink containing fenugreek and coriander seeds. This drink was then withheld while a new TFT was ordered. The results of this test were consistent with the patient's clinical presentation of hypothyroidism, confirming an interference in the previous tests. If unrecognized, this interference could lead to a delay in diagnosis and possible further morbidity or death. Additional studies are needed to confirm and explore the extent of such interactions and build guidelines to detect them.

**Keywords:** fenugreek, coriander, laboratory interference, hypothyroidism, thyroid function test.

**Introduction**

Herbal remedies such as fenugreek and coriander seeds are commonly used to manage diabetes and metabolic syndrome, however, limited high-quality evidence supports their therapeutic efficacy and safety [1,2]. Often, these remedies are consumed based on general advice from the public or social media rather than medical advice, which can lead to potential overdoses, laboratory interferences, or unexpected complications [3,4,5], as was witnessed in the case below. This underscores the importance of considering herbal remedies as potential sources of laboratory interference and highlights the need for healthcare providers to thoroughly explore patients' use of alternative therapies.

**Case Presentation**

A 50-year-old female with a medical history of type 2 diabetes mellitus, hypercholesterolemia, and hypothyroidism. She was referred to the Endocrinology Clinic for Type 2 diabetes mellitus management as her HbA1c% was 11.10. Her medications are levothyroxine 50 mcg daily, mixed insulin, Sodium Glucose co-transporters-2 inhibitors (SGLT-2i), Dipeptidyl Peptidase-4 inhibitors (DPP-4i), metformin, and atorvastatin. She is not compliant with her medications. Her main complaint was generalized fatigue and loss of energy that

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was blamed on uncontrolled diabetes. She complained of excessive thirst, polyurea, polyphagia, generalized fatigue, constipation, and cold intolerance. Her vital signs were heart rate 69, respiratory rate 17, blood pressure 138/89, and temperature 36.8 c. On physical examination, she had positive delayed relaxation of ankle reflexes.

On further evaluation of her referral blood work, the thyroid function test (TFT) did not correlate with the patient's clinical pictures. It showed possible central hyperthyroidism (mildly elevated thyroid stimulating hormone (TSH), free thyroxine (T4), and free triiodothyronine (T3), which was repeated twice by the lab and confirmed the same results. On further evaluation and history taking, she stated that she stopped taking levothyroxine about three months ago as she felt fine without it. She also states that she takes nightly herbal drinks made of fenugreek and coriander seeds to help control her diabetes. She denied taking any other medications or vitamins, such as biotin. We recommended holding the herbal drink for a few days and then repeating TFT for possible laboratory interference from the herbal drink. The patient ended up repeating the TFT after 7 days, which showed results consistent with her symptoms of severe hypothyroidism, as shown in Table 1. She was restarted on levothyroxine with the resolution of her symptoms and improvement. On the other hand, diabetes control slightly improved with insulin adjustment, but she needs to work on diet, exercise, and medication compliance (Table 1).

**Discussion**

Herbal remedies such as fenugreek and coriander seeds are recognized for their medicinal and biological properties. Both have shown therapeutic potential as anti-diabetic, anti-carcinogenic, anti-inflammatory, and antioxidant [6,7]. Generally, fenugreek and coriander supplementations are safe and well-tolerated in various studies [8,9, 10, 11, 12]. However, based on the source of herbal collection, there is a potential health risk of contamination with

potentially harmful elements or toxic metals [13,14].

During the beginning of this decade, there was an increase in the incidence of biotin interference with thyroid function test immunoassay due to the consumption of over-the-counter hair and nail supplements containing high doses of biotin [15]. When we look at herbal remedies, there is a high prevalence of use, as shown in a cross-sectional study conducted in general practice patients, which showed that about 62% of 1184 participants reported using herbal medicine in the past 12 months. Most users trust their safety and efficacy. Only 35% of the herbal users discussed their usage with the health care provider [16]. Another observational study showed that about 50% of Northern Cyprus respondents believe in herbal safety and effectiveness without side effects when treating minor health conditions [17]. With this high prevalence of herbal use and belief in their safety and effectiveness without medical supervision, this raises the risk of possible adverse events [18, 19]

In our case, we presented a possible downside of using herbal remedies (fenugreek and coriander seeds), which resulted in falsely elevated Free T4 and elevated TSH levels that led to missing the diagnosis of severe hypothyroidism and focusing on diabetes management as a sole cause of her fatigue. This interference affected one of the cornerstones of clinical decision-making: laboratory test results [20]. Laboratory interferences can significantly impact healthcare outcomes by leading to inaccurate test results, which may lead to misdiagnosis, inappropriate treatment, and compromise patient safety [21]. There are different sources of laboratory interferences; some are endogenous, like heterophil antibodies, and some are exogenous, like drugs, vitamins, or herbs that the patients consume [21,22,23].

In our case, there was a possible exogenous interference, which was resolved by withholding the nightly fenugreek and coriander seed drink for one week and repeating the TFT. The repeated TFT was consistent with the patient's

**Table 1.** Result of Thyroid Function Test during Management.

Lab test	With Herbal Drink	Without Herbal Drink	Ref. Range
TSH	7.770 Test was repeated 2 times for confirmation	5	0.30-4.50 µIU/mL
Free T4	4.56 Test was repeated 2 times for confirmation	< 0.42	0.70-1.48 ng/dL
Free T3	Not done	1.88	1.58-3.91 pg/mL

presentation, showing elevated TSH and very low Free T4. The exact mechanism of this interference is unknown; whether related to the compound present in fenugreek and coriander seeds, or contamination with unknown harmful elements in the seed, further studies are needed to confirm these possibilities. To our knowledge, this is the first report of this possible interference.

There is a need for further studies on the possibilities of herbs interfering with laboratory tests, resulting in the construction of strategies and guidelines to mitigate and discover these interferences [24,25]. This can begin with detecting and reporting these obstructions, which depend on good collaboration and communication between laboratory professionals and clinicians [26,27], in addition to educating and raising awareness of healthcare providers of these interferences and the importance of accurate patient history of medication and alternative therapies use, which might mitigate this risk [28].

### Conclusion

Fenugreek and coriander seeds have multiple health benefits and properties. Although, there is possible laboratory interference with Thyroid Function Tests that, if left unrecognized, may lead to misinterpretation of the results and compromise patient safety. Therefore, further studies to identify this interference and for other herbs are needed to initiate guidelines to detect them and improve health care.

### Declarations' section

**Competing interests:** None.

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**Ethics approval and consent to participate:**

As this is a case report, Ethics Committee approval was not required.

### Consent for publication

The patient's consent was taken to publish the case details.

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