



Research Spotlight: Serum Ferritin as a Biomarker for Thyroid Function

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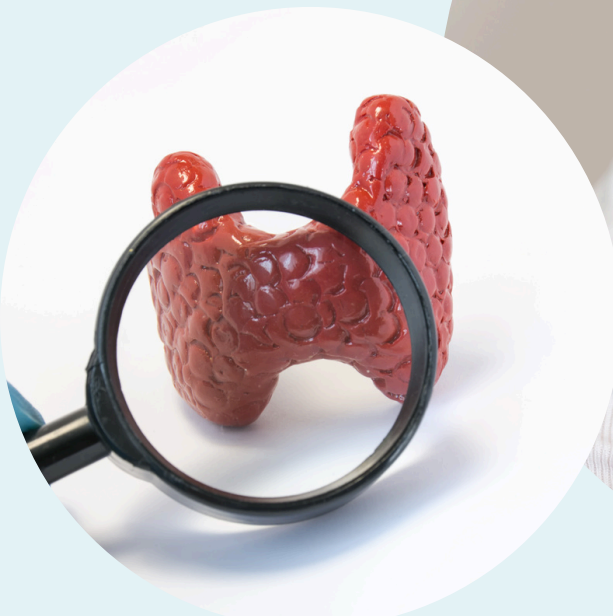
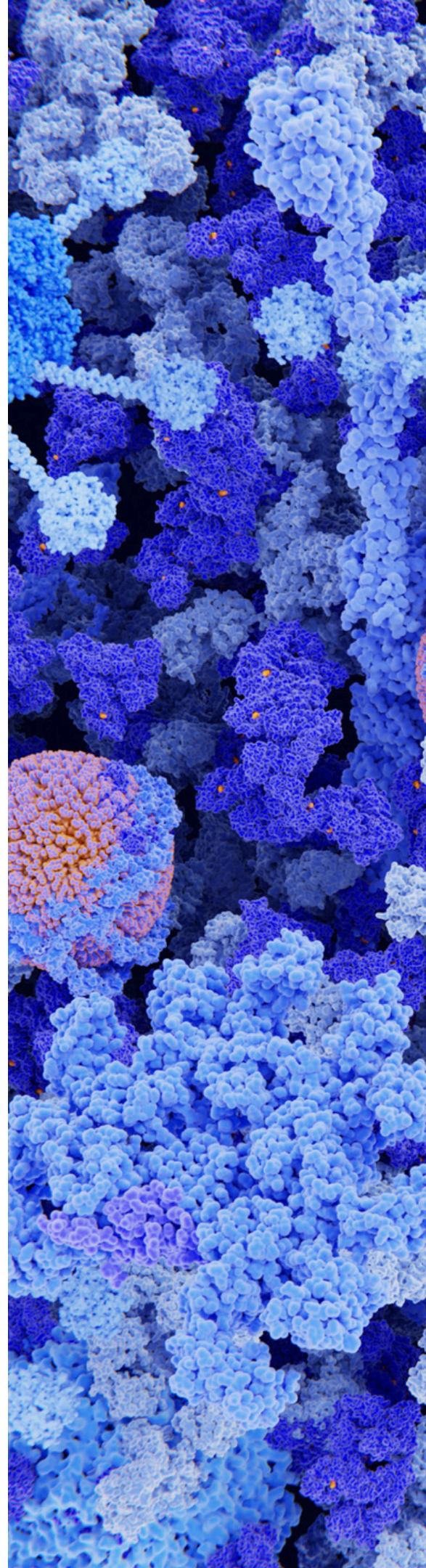


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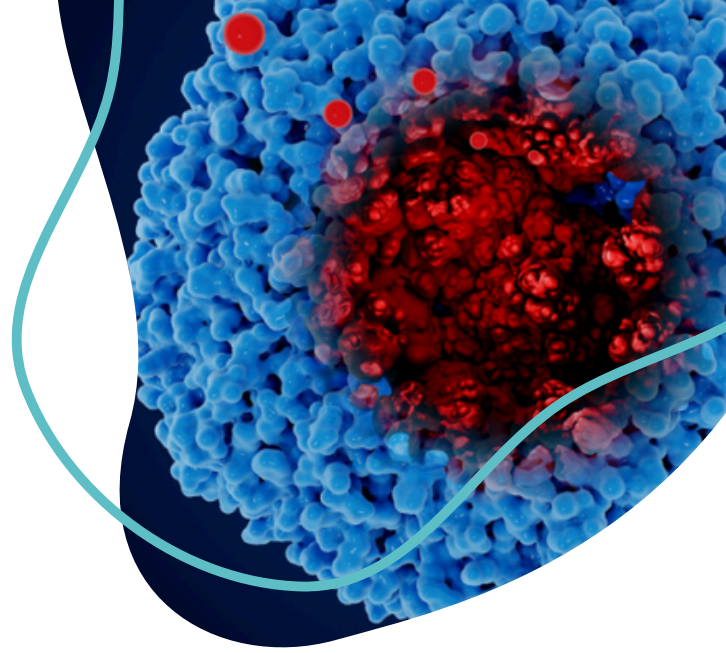
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The thyroid gland is a pivotal player in the body's metabolic system and regulates many physiological processes, from energy expenditure and metabolism to heart rate and body temperature.

But thyroid disorders are the most prevalent endocrine disorders, affecting 5% to 6% of the U.S. population.¹ Iron deficiency—specifically serum ferritin deficiency—is one of the common causes of thyroid dysfunction.³

In this article, we'll explore the link between serum ferritin levels and thyroid function and highlight pivotal research emphasizing this relationship.



What is Serum Ferritin?

Serum ferritin serves as the primary storage protein for iron and is a crucial biomarker for evaluating iron status.

It not only plays a pivotal role in storing iron but also in regulating its release, ensuring a balance between deficiency and excess.

This delicate equilibrium is vital because, while iron is essential for certain processes, it can be toxic in excess.¹

The Intricate Relationship Between Serum Ferritin and Iron Levels

Low serum ferritin indicates depleted iron stores, which may impact thyroid hormone production and its conversion from the inactive form (T4) to its active counterpart (T3).

Conversely, elevated serum ferritin levels may signal conditions like hemochromatosis that lead to excessive iron absorption and can also adversely affect thyroid function.

Thus, serum ferritin levels must be balanced to maintain optimal health.

The Role of Iron in Thyroid Function

The production and breakdown of thyroid hormones are closely connected to the availability of several minerals and trace elements, with iron playing a key role.

Iron's significance in thyroid function extends beyond its well-known utility in oxygen transport. It's also essential for the enzymatic processes that govern the production and conversion of thyroid hormones.

The thyroid gland requires iron to produce thyroxine (T4) and triiodothyronine (T3), the hormones responsible for regulating metabolism, energy levels, and body temperature.



Specifically, iron is a key component of thyroid peroxidase (TPO), an enzyme that catalyzes the iodination of thyroglobulin for the synthesis of T3 and T4.

Therefore, iron is essential in maintaining the delicate balance of thyroid hormone levels and, by extension, overall metabolic health.

Research Spotlight: Serum Ferritin Levels & Thyroid Function

"Association of Serum Ferritin Levels and Thyroid Hormones" is a 2023 study published in Scientific Research.

This study, carried out by the Vibrant research team, tested 16,512 individuals for serum levels of ferritin and thyroid hormones.

The study aimed to see how variations in serum ferritin levels could potentially influence the synthesis and regulation of thyroid hormones, which are critical for metabolic health and overall well-being.

Check out the study here:



The Results

The findings revealed significant associations between serum ferritin levels and various thyroid hormone levels across both genders.

Notably, researchers identified correlations with thyroxine (T4), reverse triiodothyronine (RT3), free thyroxine (FT4), and thyroid-stimulating hormone (TSH).

These associations indicate a tangible link between iron status, as reflected by serum ferritin levels, and the hormonal balance maintained by the thyroid gland.

Specifically, the study found that varying levels of serum ferritin were significantly associated with alterations in the levels of T4 and RT3, hormones integral to the body's metabolic processes.

Further, FT4 and TSH levels were also correlated with serum ferritin.

Clinical Implications

Overall, the results demonstrate how iron status directly influences thyroid health.

This suggests that managing iron deficiency or overload could be crucial in optimizing thyroid hormone synthesis and metabolism and, in turn, improving overall health.

Additionally, the results showed that age plays a crucial role in determining serum ferritin levels.

Researchers found a positive correlation between age and iron levels, indicating that as individuals age, their serum ferritin levels tend to increase significantly.



This variation in ferritin levels with age could influence thyroid function, given iron's role in thyroid hormone synthesis and metabolism.

These findings can help guide more targeted interventions, potentially involving iron supplementation or regulation as part of a treatment plan for thyroid-related conditions.

Precision Testing for Diagnosis & Management

Thyroid Panel

To gain a comprehensive assessment of thyroid function and pick up on early signs of thyroid disease, you can utilize precision testing like Vibrant America's Thyroid panel.

The Thyroid panel detects key markers involved in thyroid function, including:

- T3-Triiodothyronine
- T4-Thyroxine
- Free T3
- Free T4
- TSH
- Reverse T3
- Anti-TPO
- Anti-TG

By detecting early predictive markers of thyroid disease like Anti-TPO, alongside major thyroid hormones like TSH and FT4, you can help diagnose your patients earlier and see improved outcomes.

Micronutrient Testing

With the Micronutrient panel, you can test for iron levels as well as various other essential micronutrients.

The Micronutrient panel directly measures the intra- and extracellular nutrient status of common vitamins, minerals, cofactors, amino acids, essential fatty acids, and more.

This allows you to create personalized nutrition and supplementation plans for patients, ensuring they get the correct amount of nutrients for their bodies to prevent deficiencies.



Scan to see Vibrant's Micronutrient Testing Panel:



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The Bottom Line

Iron levels play a major role in many bodily processes, and thyroid function is no exception. The connection between serum ferritin levels, thyroid hormones, and metabolic health provides valuable insights for preventative medicine.

Vibrant's research reveals the influence iron levels have on thyroid hormones and emphasizes the importance of evaluating iron status when assessing and managing thyroid disorders. This will allow you to create more comprehensive treatment plans for thyroid dysfunction, gain a holistic view of overall metabolic health, and see better outcomes.



References:

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Be a Healthcare Pioneer

Enhance patient care with state-of-the-art functional lab testing for accurate diagnoses and targeted treatment plans.

Get Started



Regulatory Statement:

The general wellness test intended uses relate to sustaining or offering general improvement to functions associated with a general state of health while making reference to diseases or conditions. This test has been laboratory developed and its performance characteristics determined by Vibrant America LLC and Vibrant Genomics, a CLIA-certified and CAP-accredited laboratory performing the test. The lab tests referenced have not been cleared or approved by the U.S. Food and Drug Administration (FDA). Although FDA does not currently clear or approve laboratory-developed tests in the U.S., certification of the laboratory is required under CLIA to ensure the quality and validity of the tests.