GENETRACK Diagnostics

Ferritin

IRON AND FERRITIN

Iron is a mineral with several essential functions in the body. It constitutes the core of both hemoglobin, the molecule that carries oxygen from the lungs to the rest of the body, and myoglobin, a protein that provides oxygen to the muscles. Iron is also essential for growth, normal cell function, and the production of connective tissue and some hormones (1).

Approximately 25% of the iron in a normal adult is present in a storage form (2), with the most common form being ferritin (accounting for about 2/3 of storage iron) (3).

Ferritin analyses provide a sensitive, specific, and reliable measurement for determining iron deficiency at an early stage (4), and are also useful for monitoring the reaccumulation of iron stores in iron-deficient individuals who are taking iron supplements. Ferritin analyses are also beneficial for determining iron overload and response to iron chelating agents (5).

FERRITIN REFERENCE RANGES

Healthy ferritin levels are 40 – 300 ng/mL for males and 20 – 200 ng/mL for females (6). Ferritin levels below 10 ng/mL are indicative of iron deficiency anemia, while levels above 200-300 ng/mL may indicate hemochromatosis or other health complications.

SIGNS OF IRON DEFICIENCY

Low iron levels inhibit the production of hemoglobin, resulting in a reduced red blood cell count. When the body can't supply enough red blood cells to meet its demands, it manifests as anemia, which affects an estimated two billion people around the globe (7). Symptoms include tiredness, fatigue, pale skin, shortness of breath, headaches, and dizziness. These initial symptoms of deficiency can go unnoticed, but if left untreated, anemia can have serious repercussions, including impaired cognitive function, disturbances in the digestive system, and impaired immunity. Pregnant women, young children and frequent blood donors are at a much higher risk of iron deficiency (8).

SIGNS OF EXCESS IRON

Increased iron concentrations occur in hemochromatosis and acute liver disease. Usually only 8-10% of iron from the diet is absorbed. However, individuals with hemochromatosis can absorb three to four times more iron than normal (9). This excess iron cannot be naturally excreted from the body, so it accumulates in organs and tissues, eventually causing serious health complications. The symptoms of hemochromatosis include fatigue, joint pain, abdominal pain, memory problems, depression, decreased sex drive, shortness of breath, and heart flutters. Further complications can occur in untreated individuals, including heart failure, liver cirrhosis and disease, and endocrine problems (10).

TEST PROCEDURE

Correct specimen collection and handling is required for optimal assay performance.

This test requires a blood sample from a finger prick. All supplies for sample collection are provided in this kit. First wash and dry hands. Warm hands aid in blood collection. Clean the finger prick site with the alcohol swab and allow to air dry. Use the provided lancet to puncture the skin in one quick, continuous and deliberate stroke. Wipe away the first drop of blood. Massage hand and finger to increase blood flow to the puncture site. Angle arm and hand downwards to facilitate blood collection on the fingertip. Drip blood onto the blood collection card or into the microtainer tube.

Avoid squeezing or 'milking' the finger excessively. If blood flow stops, perform a second skin puncture on another finger, if more blood is required. Do not touch the fingertip.

Dispose of all sharps safely and return sample to the laboratory in the provided prepaid return shipping envelope.

Upon receipt at the laboratory, the blood sample is analyzed by the fully automated Alinity i Ferritin assay on the Alinity ci series analyzer. This assay measures blood ferritin levels using chemiluminescent microparticle immunoassay technology, where the concentration of ferritin in the blood sample is proportional to the relative light units from the chemiluminescent reaction in the assay.

TEST INTERPRETATION

This assay will provide an accurate ferritin level for the tested blood specimen. 40 – 300 ng/mL for males and 20 – 200 ng/mL for females (6).

DISCLAIMERS/LIMITATIONS

These results should be interpreted in conjunction with other laboratory and clinical information.

Additional testing is recommended if ferritin levels are inconsistent with clinical evidence.

Correct specimen collection and handling is required for optimal assay performance.

Interferences from medication or endogenous substances may affect results.

Chronic inflammatory disorders, infections, and chronic renal failure may interfere with ferritin analyses.

Values obtained with different assay methods should not be used interchangeably in serial testing.

This assay is not recommended for use during pregnancy, as ferritin diminishes late in pregnancy even when adequate iron stores are present.

False results may occur in specimens from individuals that have received preparations of mouse monoclonal antibodies for diagnosis or therapy.

REFERENCES

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