

Age: 51  
 Sex: M  
 Collection Date: 2023-11-14  
 Results Date: 2023-11-15  
 Laboratory: Elite Medical SRL

**99**

**General Score**

27 3 0 0 0

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Complete Blood Count

## RBC

Number of erythrocytes (RBC) 4.53 mil./ $\mu$ L Normal

**Red blood cells carry oxygen throughout the body.**

Erythrocytes, commonly known as red blood cells, are responsible for transporting oxygen from the lungs to the body's tissues. This measurement reflects the total count of these cells in a volume of blood.

Complete Blood Count

## HGB

Hemoglobin (HGB) 13.7 g/dL Normal

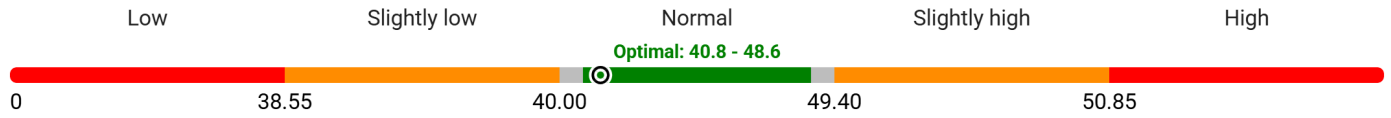
**Hemoglobin is a protein in red blood cells that carries oxygen.**

Hemoglobin is the iron-containing protein within red blood cells that binds to and transports oxygen. Hemoglobin concentration is a key indicator of the blood's oxygen-carrying capacity.

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**HCT**

Hematocrit (HCT)

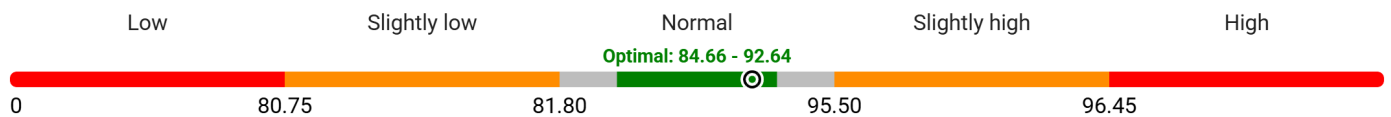
**41.4 %****Optimal**

**Hematocrit measures the proportion of blood volume occupied by red blood cells.**

Hematocrit represents the percentage of blood volume that is made up of red blood cells. It is a critical measurement for assessing red cell mass.

**MCV**

Mean corpuscular volume (MCV)

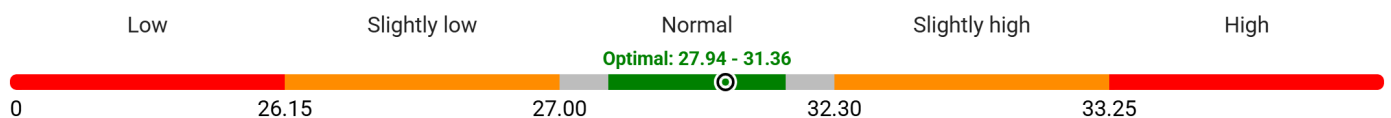
**91.4 fL****Optimal**

**MCV indicates the average size of red blood cells.**

Mean Corpuscular Volume (MCV) is an index that describes the average volume of a single red blood cell. It is calculated from the RBC count and the hematocrit value.

**MCH**

Mean corpuscular hemoglobin (MCH)

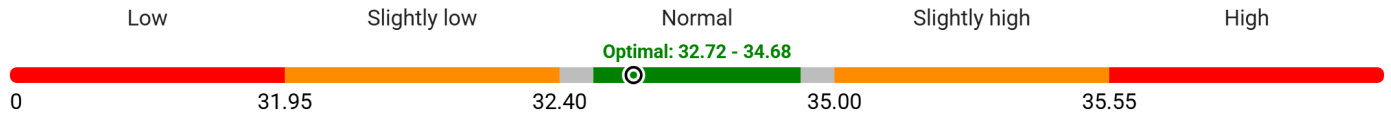
**30.2 pg****Optimal**

**MCH measures the average mass of hemoglobin per red blood cell.**

Mean Corpuscular Hemoglobin (MCH) is the average amount (mass) of hemoglobin contained in a single red blood cell. It is useful in classifying anemias.

**MCHC**

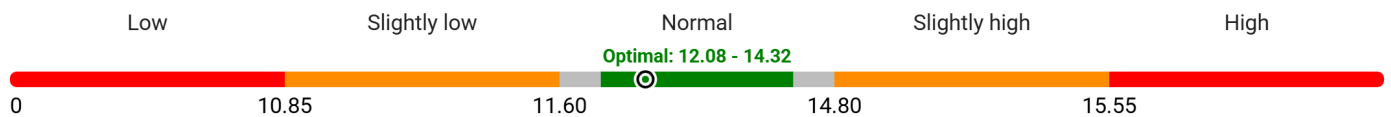
Mean corpuscular hemoglobin concentration (MCHC)

**33.1** g/dL**Optimal****MCHC measures the average concentration of hemoglobin in red blood cells.**

Mean Corpuscular Hemoglobin Concentration (MCHC) reflects the average concentration of hemoglobin within the red blood cells. It is a measure of the 'color' or saturation of the cells.

**RDWC**

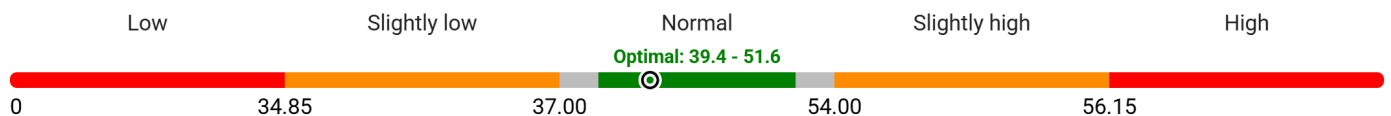
Erythrocyte distribution width - coefficient of variation (RDWC)

**12.6** %**Optimal****RDWC measures the variation in red blood cell size (anisocytosis).**

RDW-CV (Red Cell Distribution Width - Coefficient of Variation) quantifies the variability in the size of red blood cells. Elevated values suggest a mix of cell sizes.

**RDW-SD**

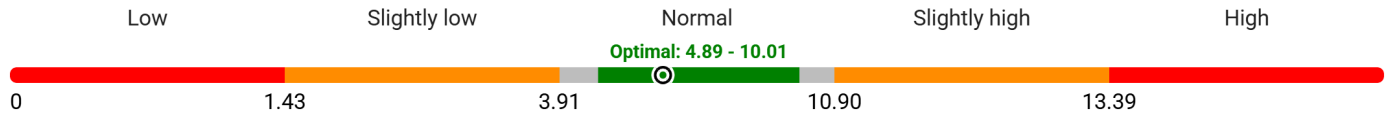
Erythrocyte distribution width - standard deviation (RDW-SD)

**42.6** fL**Optimal****RDW-SD measures the standard deviation of red blood cell volume.**

RDW-SD (Red Cell Distribution Width - Standard Deviation) is another metric used to assess the variation in red blood cell size. It is measured in femtoliters (fL).

**WBC**

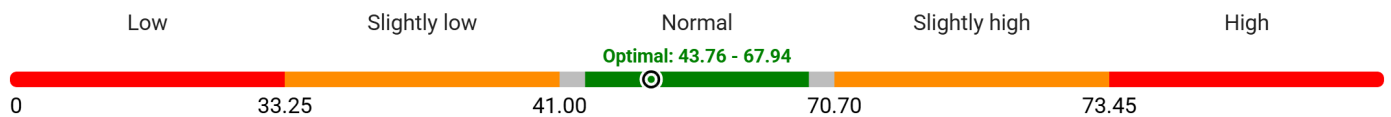
Number of leukocytes (WBC)

**6.54** mii/ $\mu$ L**Optimal****White blood cells are essential components of the immune system.**

Leukocytes, or white blood cells, are the primary cells of the immune system, defending the body against infection and foreign invaders. The total count is a general measure of immune status.

**NEUT%**

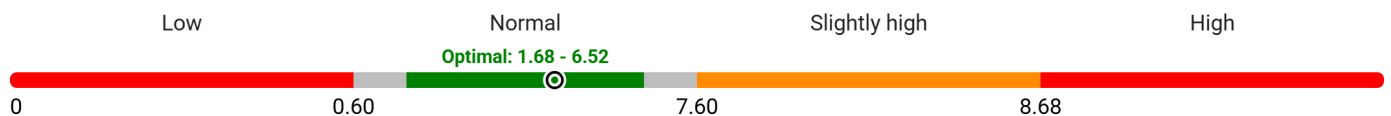
Percentage of neutrophils (NEUT%)

**50.9** %**Optimal****Percentage of neutrophils among total white blood cells.**

Neutrophils are a type of white blood cell that are typically the first responders to bacterial infection or inflammation. This value represents their proportion relative to all leukocytes.

**EOS%**

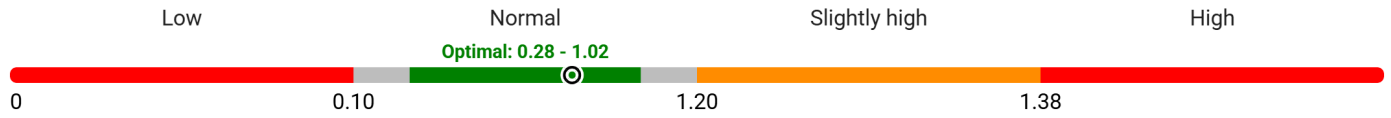
Percentage of eosinophils (EOS%)

**4.7** %**Optimal****Percentage of eosinophils among total white blood cells.**

Eosinophils are granulocytes involved primarily in allergic reactions and defense against parasites. This value shows their proportion within the total white blood cell count.

**BAS%**

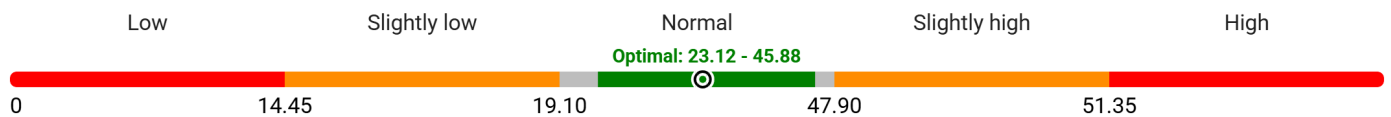
Percentage of basophils (BAS%)

**0.8 %****Optimal****Percentage of basophils among total white blood cells.**

Basophils are the least common type of white blood cell, involved in inflammatory and allergic responses by releasing histamine. This is their relative percentage in the total leukocyte count.

**LYM%**

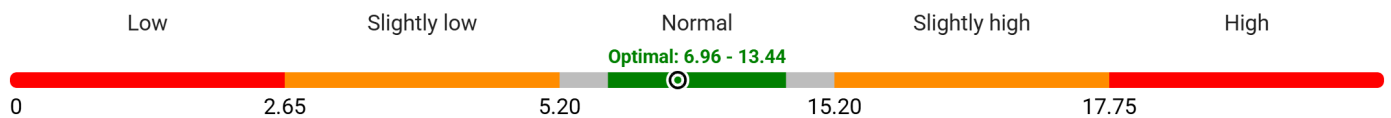
Percentage of lymphocytes (LYM%)

**34.1 %****Optimal****Percentage of lymphocytes among total white blood cells.**

Lymphocytes are key components of the adaptive immune system, responsible for specific immune responses. This value indicates their proportion relative to all white blood cells.

**MON%**

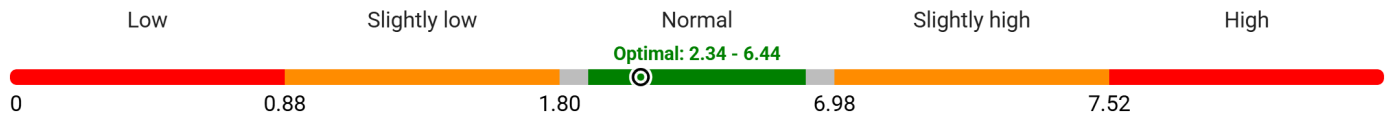
Percentage of monocytes (MON%)

**9.5 %****Optimal****Percentage of monocytes among total white blood cells.**

Monocytes are large white blood cells that differentiate into macrophages and dendritic cells at sites of infection. This value shows their relative frequency in the blood.

**NEUT**

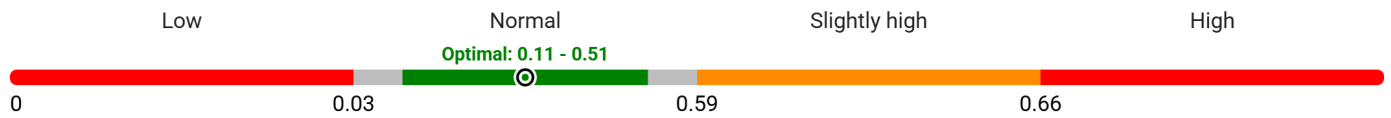
Number of neutrophils (NEUT)

**3.33** mii/ $\mu$ L**Optimal****Absolute count of neutrophils in the blood.**

This is the absolute count of neutrophils, a type of white blood cell, per unit volume of blood. Neutrophils are crucial for fighting bacterial infections.

**EOS**

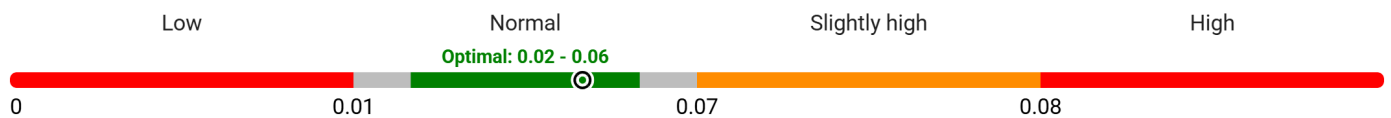
Number of eosinophils (EOS)

**0.31** mii/ $\mu$ L**Optimal****Absolute count of eosinophils in the blood.**

This is the absolute count of eosinophils, a type of white blood cell involved in allergic responses, per unit volume of blood. This count is derived from the total WBC and EOS%.

**BAS**

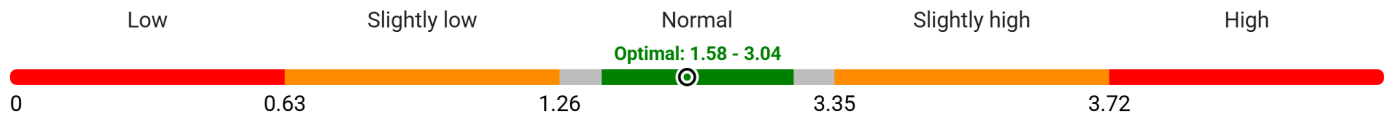
Number of basophils (BAS)

**0.05** mii/ $\mu$ L**Optimal****Absolute count of basophils in the blood.**

This is the absolute count of basophils, the least common granulocyte, per unit volume of blood. This count is derived from the total WBC and BAS%.

**LYM**

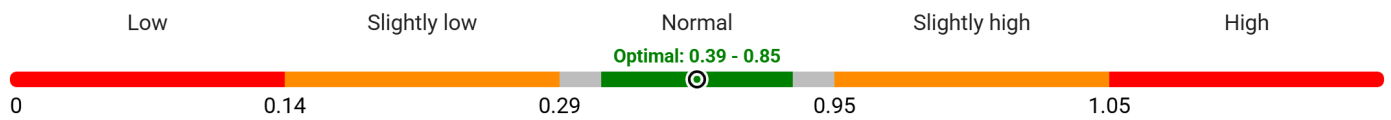
Number of lymphocytes (LYM)

**2.23** mii/ $\mu$ L**Optimal****Absolute count of lymphocytes in the blood.**

This is the absolute count of lymphocytes, key cells of the adaptive immune system, per unit volume of blood. This count is derived from the total WBC and LYM%.

**MON**

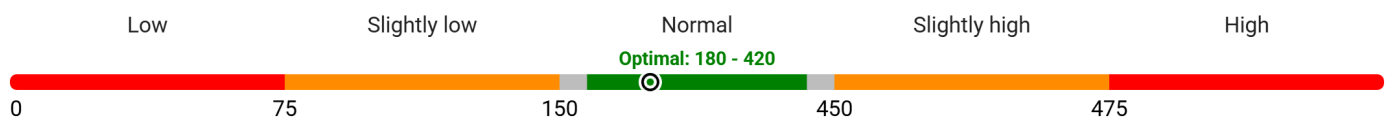
Number of monocytes (MON)

**0.62** mii/ $\mu$ L**Optimal****Absolute count of monocytes in the blood.**

This is the absolute count of monocytes, which mature into macrophages, per unit volume of blood. This count is derived from the total WBC and MON%.

**PLT**

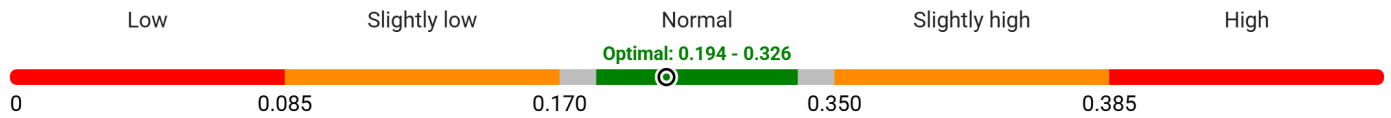
Number of thrombocytes (PLT)

**249** mii/ $\mu$ L**Optimal****Platelet count, essential for blood clotting.**

Thrombocytes, or platelets, are cell fragments critical for initiating the blood clotting process. The count reflects the number available for hemostasis.

**PCT**

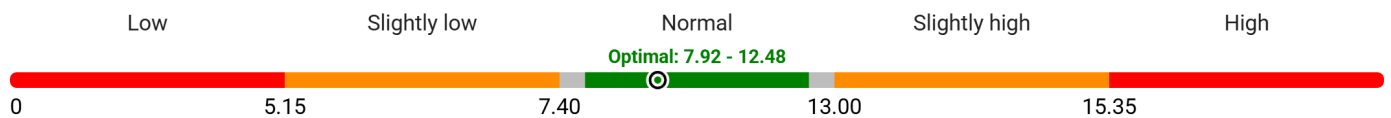
Thrombocrit (PCT)

**0.24 %****Optimal****PCT measures the total volume occupied by platelets in the blood.**

Thrombocrit (PCT) is the percentage of total blood volume occupied by platelets. It is related to platelet mass and count.

**MPV**

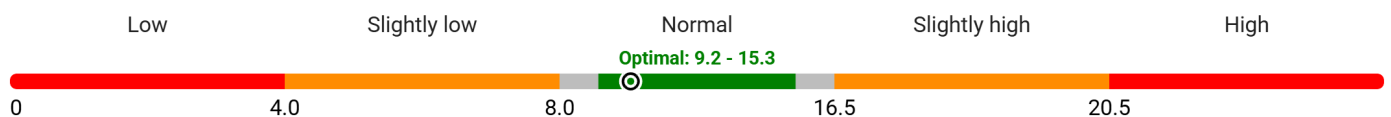
Mean platelet volume (MPV)

**9.4 fL****Optimal****MPV indicates the average size of platelets.**

Mean Platelet Volume (MPV) measures the average size of platelets circulating in the blood. Larger platelets are often younger and more reactive.

**PDW**

Platelet distribution width (PDW)

**10.2 fL****Optimal****PDW measures the variation in platelet size.**

Platelet Distribution Width (PDW) is an indicator of platelet anisocytosis, meaning the variation in the size of the circulating platelets. It is measured in femtoliters.

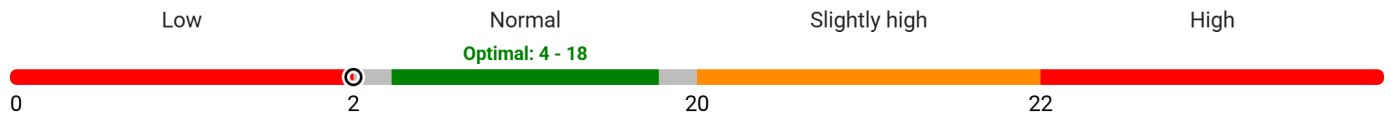
## Inflammation Markers

### ESR

ESR (Erythrocyte Sedimentation Rate)

2 mm/h

Normal



**ESR measures the rate at which red blood cells settle in a vertical tube over one hour.**

The Erythrocyte Sedimentation Rate (ESR) is a non-specific test that measures the rate of settling of red blood cells. It is often used as a general marker of inflammation in the body.

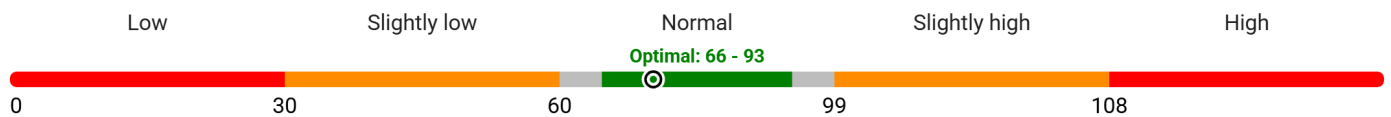
## Biochemistry

### Serum glucose

Serum glucose (glycemia)

73.3 mg/dL

Optimal



**Measures the level of glucose (sugar) in the blood serum.**

Serum glucose, or blood sugar, is the primary source of energy for the body's cells. Maintaining stable glucose levels is vital for metabolic function.

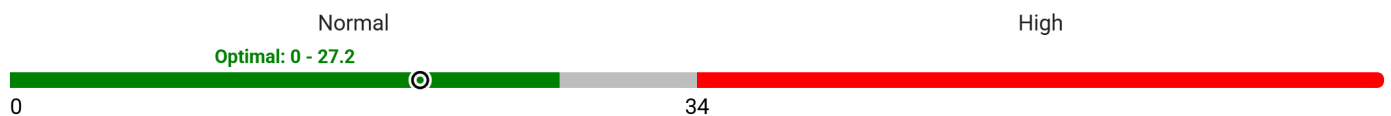
## Thyroid Function

### ATPO

Anti-TPO antibodies (ATPO)

20.3 UI/mL

Optimal



**Measures antibodies against thyroid peroxidase.**

Anti-TPO antibodies target the enzyme thyroid peroxidase, which is essential for thyroid hormone production. Elevated levels are often associated with autoimmune thyroid conditions.

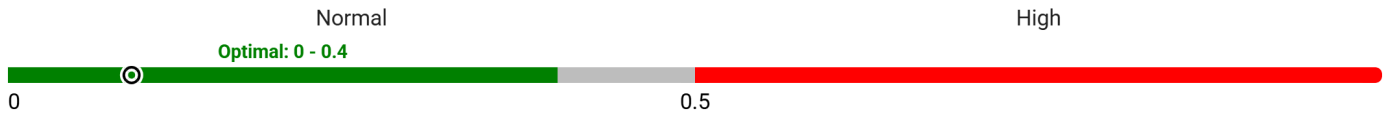
## Inflammation Markers

### CRP

C-reactive protein (CRP) - quantitative

0.09 mg/dL

Optimal



#### Quantitative measurement of C-reactive protein.

C-reactive protein (CRP) is an acute-phase reactant synthesized by the liver in response to inflammation or infection. A quantitative test provides a precise measurement of its concentration.

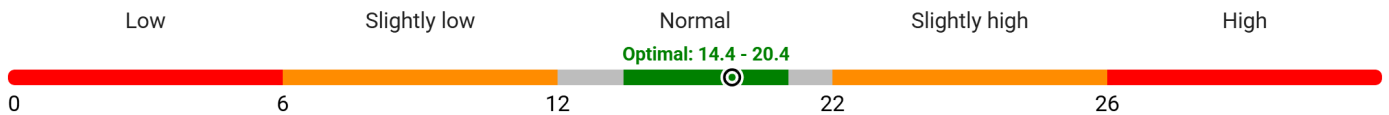
## Thyroid Function

### FT4

FT4 (Free thyroxine)

18.35 pmol/L

Optimal



#### Measures the level of unbound, biologically active thyroxine hormone.

Free Thyroxine (FT4) is the unbound, metabolically active form of the thyroid hormone thyroxine (T4). Measuring the free fraction provides insight into thyroid hormone availability.

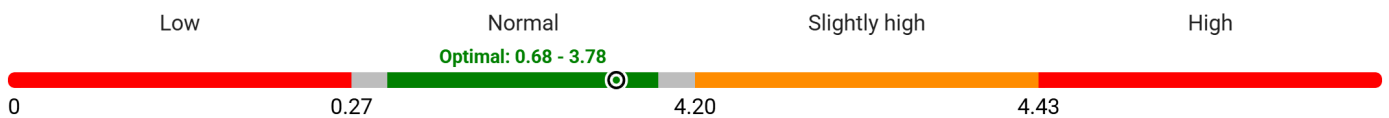
## Thyroid Function

### TSH

TSH (Thyroid-stimulating hormone)

3.3  $\mu$ UI/mL

Optimal

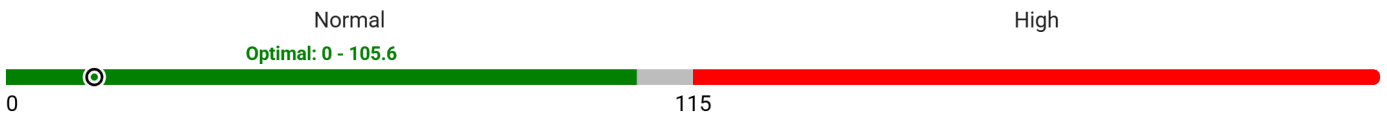


#### Measures the pituitary hormone that regulates thyroid function.

Thyroid-stimulating hormone (TSH) is secreted by the pituitary gland and controls the production of thyroid hormones (T3 and T4). It is the most sensitive marker for primary thyroid disorders.

**Anti-thyroglobulin antibodies**

Anti-thyroglobulin antibodies

**14.8** UI/mL**Optimal****Measures antibodies against thyroglobulin.**

Anti-thyroglobulin antibodies target thyroglobulin, a protein precursor for thyroid hormones. Their presence is often used in monitoring autoimmune thyroid diseases.

### **General Summary of Blood Test**

- Complete blood count (CBC) parameters are within normal limits, indicating stable hematologic status with no evidence of anemia, infection, or thrombocytopenia.
- Serum glucose is normal at 73.3 mg/dL, suggesting good glycemic control without evidence of diabetes or hypoglycemia.
- Thyroid function tests including TSH (3.3  $\mu$ UI/mL) and Free T4 (18.35 pmol/L) are within reference ranges, with negative thyroid autoantibodies, indicating euthyroid status without autoimmune thyroid disease.
- Inflammatory markers such as CRP (0.09 mg/dL) and ESR (2 mm/h) are low, supporting absence of systemic inflammation or acute infection.

### **Purpose and Importance of the Analysis**

- This panel was performed to assess hematological health, metabolic status, and thyroid function in a 51-year-old male to rule out common disorders such as anemia, infection, diabetes, and thyroid dysfunction.
- Evaluation of blood cell counts and indices helps identify subtle hematologic abnormalities including anemia types or early inflammation.
- Thyroid hormone and antibody measurement aids in diagnosing subclinical thyroid disorders or autoimmune thyroiditis.

### Comprehensive Overview of Patient's Health Status

- Red blood cell count (4.53 mil./ $\mu\text{L}$ ), hemoglobin (13.7 g/dL), and hematocrit (41.4%) are all within normal reference ranges, indicating no anemia or polycythemia.
- White blood cell count (6.54 mii/ $\mu\text{L}$ ) and differential percentages (neutrophils 50.9%, lymphocytes 34.1%, monocytes 9.5%) are normal, suggesting absence of acute infection or hematologic malignancy.
- Platelet count (249 mii/ $\mu\text{L}$ ) and platelet indices (MPV 9.4 fL, PDW 10.2 fL) are normal, supporting adequate platelet production and no evidence of thrombocytopenia or platelet activation.
- Thyroid tests (TSH 3.3  $\mu\text{UI}/\text{mL}$ , FT4 18.35 pmol/L) within normal range, along with low thyroid antibodies, indicate euthyroid status without autoimmune thyroid disease.

### Key Findings and Their Implications

- Normal RBC indices (MCV 91.4 fL, MCH 30.2 pg, MCHC 33.1 g/dL) exclude microcytic or macrocytic anemia, consistent with adequate iron status and erythropoiesis.
- Normal neutrophil and lymphocyte counts in absolute and percentage values reflect balanced immune status without evidence of bacterial or viral infection.
- Low inflammatory markers (CRP and ESR) corroborate the clinical impression of no active inflammation or infection.
- Glucose level (73.3 mg/dL) is within fasting normal range, making diabetes mellitus or impaired fasting glucose unlikely.

### Analysis of Health Trends and Patterns

- The RBC parameters show a normocytic normochromic profile, indicating no evidence of anemia or erythrocyte morphological abnormalities.
- WBC differential distribution and total count are balanced without relative or absolute leukocytosis or leukopenia, suggesting stable immune function and absence of systemic infection or inflammation.
- Platelet count and morphology parameters are stable, indicating normal thrombopoiesis and no platelet activation or destruction.
- Thyroid hormone levels and autoantibodies demonstrate euthyroid function and no autoimmune thyroid disease, which is important given the patient's age where subclinical thyroid dysfunction can increase.

### Correlations Between Different Test Results

- Normal glucose and absence of inflammation (CRP 0.09 mg/dL) together suggest low risk for metabolic syndrome or systemic inflammatory conditions.
- Normal thyroid function tests correlate with the lack of anemia or leukopenia since hypothyroidism can sometimes cause mild anemia and immune modulation.
- Normal platelet indices alongside normal ESR and CRP further support absence of active systemic disease or inflammatory conditions that could affect hematopoiesis.

### Identification of Potential Health Risks

- No significant hematological abnormalities were identified, suggesting very low risk for anemia, infection, or hematologic malignancies at this time.
- Euthyroid status with negative thyroid antibodies indicates low risk for autoimmune thyroiditis or thyroid dysfunction in the near future.
- Normal glucose level reduces immediate risk for diabetes mellitus.
- Low inflammatory markers imply low cardiovascular and systemic inflammatory risk.

### Analysis of Risk Severity and Probabilities

- Risk of anemia or hematologic disorders is estimated below 5% based on stable CBC parameters within normal limits.
- Probability of autoimmune thyroid disease is less than 3%, given negative anti-TPO and anti-thyroglobulin antibodies and normal thyroid hormones.
- Risk of diabetes mellitus or impaired glucose tolerance is below 2%, supported by normal fasting glucose and absence of systemic inflammation.
- Cardiovascular risk related to inflammation is minimal (<5%) due to low CRP and ESR.

### Probabilities of Diseases

- Iron Deficiency or Anemia: 3% - Low probability given normal RBC indices and hemoglobin.
- Autoimmune Thyroid Disease: 3% - Based on negative thyroid antibodies and normal TSH/FT4.
- Diabetes Mellitus: 2% - Normal fasting glucose and absence of inflammatory markers.
- Chronic Infection or Inflammation: 1% - Very low due to normal CRP and ESR.
- Hematologic Malignancy: 1% - Very low, supported by normal WBC count and differential.
- Other Conditions: 90% - Reflects general good health and absence of laboratory abnormalities.

### Explanations of Percentiles

- The risk of anemia at 3% places the patient well below the 20th percentile compared to population norms for middle-aged males, as nearly all hematologic indices are within normal ranges.
- Autoimmune thyroid disease probability of 3% aligns with population prevalence in euthyroid individuals with negative autoantibodies, indicating low likelihood of development.
- Diabetes risk of 2% corresponds to the low end of risk spectrum for fasting glucose under 100 mg/dL and no inflammatory activity.
- Cardiovascular and systemic inflammation risk below 5% is consistent with minimal CRP and ESR values, reflecting low percentile compared to patients with chronic inflammatory diseases.

### Medical Recommendations Based on Test Results

- No immediate medical interventions are indicated based on current laboratory findings.
- Routine monitoring of thyroid function and hematologic parameters is advisable with annual check-ups to detect any emerging abnormalities.
- Maintain regular screening for glucose metabolism given age-related risk, despite currently normal values.

### Lifestyle and Dietary Suggestions

- Continue a balanced, nutrient-rich diet with adequate intake of iron, vitamins B12, and folate to support hematologic health.
- Maintain regular physical activity to support cardiovascular and metabolic health.
- Avoid smoking and limit alcohol consumption to reduce risk of systemic inflammation and thyroid dysfunction.
- Regular sleep pattern and stress management are recommended to support immune and endocrine function.

### **Suggested Follow-up Tests and Procedures**

- Repeat thyroid function tests and antibody panels in 6-12 months to monitor for any emerging thyroid dysfunction, especially if clinical symptoms develop.
- Consider fasting lipid profile and HbA1c testing if cardiovascular risk factors change or to further stratify metabolic risk.
- Routine CBC monitoring yearly to detect any latent hematologic abnormalities.

### **Referral to Specialists if Necessary**

- No specialist referral is warranted at this time given all parameters are within normal limits.
- Should symptoms of thyroid dysfunction or hematologic abnormalities arise, referral to Endocrinology or Hematology respectively is recommended.

### Summary of Findings

- The laboratory results demonstrate a stable hematologic profile with no evidence of anemia, infection, or platelet abnormalities.
- Thyroid function is normal and autoimmune thyroid disease is unlikely based on negative antibodies.
- Glycemic control is adequate with normal fasting glucose and no signs of inflammation.
- Overall, the patient exhibits no laboratory-based indications of systemic disease, metabolic dysfunction, or autoimmune processes.

### Final Recommendations and Next Steps

- Maintain healthy lifestyle habits and continue routine annual laboratory monitoring to promptly identify any future changes.
- Educate the patient on symptoms suggesting thyroid or hematologic disorders to ensure timely clinical evaluation if they arise.
- No urgent medical or specialist interventions are indicated at present.

