Complete Blood Count (CBC) – [Whole Blood EDTA] Analysis

Objective

The objective of this test is to evaluate the cellular components of blood including red blood cells (RBC), white blood cells (WBC), hemoglobin concentration, hematocrit, and platelets. It aids in diagnosing anemia, infections, bleeding disorders, and hematological diseases.

Materials and Methods

Materials:
- Whole blood sample collected in EDTA anticoagulant tubes
- Automated hematology analyzer
- Standard laboratory equipment (pipettes, centrifuge)

Methods:
1. Sample Collection: Collect venous blood into EDTA tubes.
2. Analysis: Perform automated hematology analyzer counting and differential.
3. Interpretation: Compare values to reference ranges to detect abnormalities.
4. Quality Control: Use control samples and calibrators for accuracy.
5. Reporting: Provide numeric counts and morphological notes if applicable.

Results

- RBC: 4.5–6.0 million/µL
- WBC: 4,000–11,000/µL
- Hemoglobin: 13.5–17.5 g/dL (male), 12.0–15.5 g/dL (female)
- Hematocrit: 38–50% (male), 34–44% (female)
- Platelets: 150,000–450,000/µL
- Abnormal values may indicate anemia, infection, inflammation, bleeding disorders, or hematological malignancies.

Conclusion

Complete Blood Count is a fundamental hematological test essential for evaluating overall health and detecting a wide range of disorders. Results should be interpreted alongside clinical findings and other laboratory tests.