Bilirubin (Total, Direct, Indirect) – [Serum] Analysis

Objective

The objective of this test is to measure total, direct (conjugated), and indirect (unconjugated) bilirubin levels in serum. These measurements are used to assess liver function, diagnose types of jaundice, and evaluate hemolytic or hepatobiliary disorders.

Materials and Methods

Materials:
- Serum sample from patient
- Diazo reagent or automated biochemical analyzer
- Standard laboratory equipment (centrifuge, pipettes, test tubes)

Methods:
1. Sample Collection: Collect venous blood and separate serum via centrifugation.
2. Total Bilirubin Measurement: Perform assay using diazo method or automated analyzer.
3. Direct Bilirubin Measurement: Quantify conjugated bilirubin directly.
4. Indirect Bilirubin Calculation: Subtract direct bilirubin from total bilirubin.
5. Interpretation: Elevated direct bilirubin suggests obstructive or hepatocellular jaundice, while elevated indirect bilirubin indicates hemolysis or impaired conjugation.

Results

- Normal total bilirubin: 0.3–1.2 mg/dL
- Normal direct bilirubin: 0.0–0.3 mg/dL
- Indirect bilirubin: Calculated (total – direct)
- Elevated total and direct bilirubin: Indicates obstructive or hepatocellular jaundice
- Elevated indirect bilirubin: Suggests hemolytic disorders or unconjugated hyperbilirubinemia

Conclusion

Fractionated bilirubin testing (total, direct, indirect) provides a detailed assessment of liver function and helps differentiate between hepatocellular, obstructive, and hemolytic causes of jaundice. Results should be correlated with other liver function tests and clinical findings.