

# Calcium – [Serum] Analysis

## Objective

The objective of this test is to measure total serum calcium levels. Calcium plays a vital role in bone metabolism, neuromuscular function, and blood coagulation. This test aids in diagnosing parathyroid disorders, renal disease, and metabolic imbalances.

## Materials and Methods

### Materials:

- Serum sample from patient
- Automated biochemical analyzer or colorimetric assay kits
- Standard laboratory equipment (pipettes, centrifuge)

### Methods:

1. Sample Collection: Collect venous blood and separate serum by centrifugation.
2. Measurement: Determine total serum calcium concentration using colorimetric or atomic absorption methods.
3. Calibration: Use calibrators for assay accuracy.
4. Interpretation: Compare results to reference ranges to detect hypercalcemia or hypocalcemia.
5. Quality Control: Include controls to ensure reliability and accuracy.

## Results

- Normal range: 8.5–10.5 mg/dL (varies by laboratory)
- High calcium: May indicate hyperparathyroidism, malignancy, or vitamin D intoxication
- Low calcium: Suggests hypoparathyroidism, vitamin D deficiency, or renal failure

## Conclusion

Serum calcium measurement is crucial in evaluating metabolic and endocrine disorders. Interpretation should be correlated with clinical findings and other laboratory tests for comprehensive patient management.