Albumin – [Serum/Urine 24hrs] Analysis

Objective

The objective of this test is to measure albumin levels in serum and 24-hour urine samples. These measurements help assess kidney function, detect proteinuria, and evaluate conditions such as nephrotic syndrome, liver disease, and malnutrition.

Materials and Methods

Materials:
- Serum and 24-hour urine samples from patient
- Albumin assay reagents (e.g., immunoassay, bromocresol green method)
- Spectrophotometer or automated biochemical analyzer
- Standard laboratory equipment (centrifuge, pipettes, volumetric containers)

Methods:
1. Serum Albumin Measurement: Analyze serum albumin using dye-binding or immunoassay methods.
2. 24-hour Urine Collection: Collect urine over 24 hours, measure total volume, and analyze for albumin concentration.
3. Protein Quantification: Calculate daily albumin excretion (mg/day) and compare with normal ranges.
4. Quality Control: Use calibration standards and internal controls to ensure accuracy.
5. Interpretation: Correlate elevated urinary albumin with kidney damage; low serum albumin may indicate liver disease or malnutrition.

Results

- Normal serum albumin: 3.5–5.0 g/dL
- Normal urine albumin (24 hrs): < 30 mg/day
- Microalbuminuria: 30–300 mg/day (early kidney disease marker)
- Proteinuria: > 300 mg/day (significant renal pathology)

Conclusion

Albumin measurement in serum and 24-hour urine is a crucial test for assessing kidney and liver health. Elevated urinary albumin indicates kidney damage, while low serum albumin may reflect malnutrition or chronic liver disease. Interpretation must consider clinical context and complementary tests.