24 Hours Urine Protein – [Serum] Analysis

Objective

The objective of this test is to measure the total protein excreted in urine over a 24-hour period, which helps in assessing kidney function and diagnosing conditions such as nephrotic syndrome, proteinuria, or chronic kidney disease.

Materials and Methods

Materials:
- 24-hour urine sample
- Serum sample for comparison (if required)
- Protein assay reagents (e.g., Biuret method)
- Standard laboratory equipment (measuring cylinders, centrifuge, pipettes)

Methods:
1. Sample Collection: Collect all urine voided by the patient over a 24-hour period in a clean container.
2. Sample Preparation: Mix the urine thoroughly and measure total volume.
3. Protein Estimation: Analyze protein concentration using colorimetric methods (e.g., Biuret or Pyrogallol Red method).
4. Serum Comparison: If required, compare urine protein with serum protein levels to evaluate kidney filtration efficiency.
5. Quality Control: Use standard controls to ensure accuracy and reliability of results.
6. Interpretation: Compare results with reference ranges to diagnose proteinuria or related conditions.

Results

- Normal 24-hour urine protein excretion: < 150 mg/day
- Microalbuminuria: 30–300 mg/day (indicative of early kidney disease)
- Proteinuria: > 300 mg/day (indicative of nephrotic syndrome or glomerular disease)

Conclusion

The 24-hour urine protein test is a critical diagnostic tool for evaluating kidney function and detecting abnormal protein loss. It is often used alongside serum protein measurements to provide a comprehensive assessment of renal health.