

Albumin – [CSF] Analysis

Objective

The objective of this test is to measure albumin concentration in cerebrospinal fluid (CSF). CSF albumin levels are used to evaluate blood-brain barrier integrity and diagnose conditions such as meningitis, multiple sclerosis, and other central nervous system (CNS) disorders.

Materials and Methods

Materials:

- CSF sample obtained via lumbar puncture
- Albumin assay reagents (e.g., immunoassay or colorimetric methods)
- Spectrophotometer or automated analyzer
- Standard laboratory equipment (pipettes, centrifuge, collection tubes)

Methods:

1. Sample Collection: Obtain CSF via lumbar puncture under sterile conditions.
2. Albumin Measurement: Analyze albumin concentration using immunoassay or dye-binding methods.
3. Calculation: Determine albumin index (CSF albumin/serum albumin ratio) for assessing blood-brain barrier permeability.
4. Quality Control: Perform test with calibration standards and controls to ensure accuracy.
5. Interpretation: Compare results with reference ranges; elevated levels suggest blood-brain barrier dysfunction or CNS pathology.

Results

- Normal CSF albumin: 10–30 mg/dL (varies by laboratory)
- Elevated albumin: Indicates blood-brain barrier disruption (e.g., meningitis, encephalitis, multiple sclerosis)
- Albumin index > 9: Suggests significant barrier dysfunction

Conclusion

CSF albumin measurement is essential for assessing blood-brain barrier integrity and diagnosing neurological conditions. Interpretation should be combined with clinical evaluation and other CSF findings for accurate diagnosis.