

Alcohol (Quantitative) – [Serum/Urine Spot] Analysis

Objective

The objective of this test is to quantitatively measure alcohol (ethanol) levels in serum or spot urine samples. It is used for clinical evaluation of intoxication, monitoring in alcohol poisoning cases, and forensic investigations in medicolegal settings.

Materials and Methods

Materials:

- Serum or spot urine sample from patient
- Enzymatic alcohol assay kits or gas chromatography (GC) equipment
- Standard laboratory tools (centrifuge, pipettes, vials)

Methods:

1. Sample Collection: Obtain serum or urine spot sample using standard sterile technique.
2. Quantification: Perform ethanol measurement using enzymatic method (alcohol dehydrogenase) or confirm with gas chromatography.
3. Calibration: Use standard ethanol solutions to generate calibration curves for accurate results.
4. Quality Control: Include internal and external controls to ensure precision.
5. Interpretation: Compare quantitative results against legal and clinical reference limits (e.g., intoxication thresholds).

Results

- Normal: 0 mg/dL (no detectable alcohol)
- Clinical intoxication: Typically > 80 mg/dL (varies by jurisdiction)
- Toxic/lethal levels: > 300–400 mg/dL
- Forensic interpretation: Compare against local legal limits for driving or workplace testing

Conclusion

Quantitative alcohol testing in serum or urine provides objective evidence for clinical and legal evaluation of alcohol consumption or poisoning. Accurate interpretation requires consideration of clinical presentation, timing of sample collection, and jurisdictional limits.