Beta HCG (Quantitative) – [Serum] Analysis

Objective

The objective of this test is to quantitatively measure beta-human chorionic gonadotropin (β-hCG) levels in serum. This test is primarily used for confirming and monitoring pregnancy, diagnosing ectopic pregnancies, and monitoring trophoblastic or germ cell tumors.

Materials and Methods

Materials:
- Serum sample from patient
- Immunoassay kits (ELISA, CLIA) for β-hCG
- Microplate reader or automated analyzer
- Standard laboratory equipment (pipettes, centrifuge)

Methods:
1. Sample Collection: Collect venous blood and separate serum by centrifugation.
2. Hormone Measurement: Perform β-hCG assay using quantitative immunoassay methods.
3. Calibration: Utilize standard calibrators provided in the assay kit for accurate measurement.
4. Interpretation: Compare β-hCG levels with gestational age-specific reference ranges or tumor marker cut-offs.
5. Follow-up: Serial measurements may be required to monitor pregnancy progression or treatment response.

Results

- Non-pregnant females: < 5 mIU/mL
- Positive pregnancy: Rising β-hCG levels consistent with gestational age
- Abnormal patterns: Slow rise or decline may indicate ectopic pregnancy or miscarriage
- Elevated β-hCG in non-pregnant patients: Suggests trophoblastic disease or germ cell tumors

Conclusion

Quantitative β-hCG testing is vital for pregnancy confirmation, monitoring early pregnancy development, and diagnosing pregnancy-related or tumor conditions. Interpretation should consider clinical history, ultrasound findings, and serial β-hCG trends.