Blood Group (ABO & Rh Typing) – [Whole Blood EDTA] Analysis

Objective

The objective of this test is to determine the ABO blood group and Rh factor (D antigen) using EDTA-anticoagulated whole blood. Blood typing is essential for safe blood transfusion, organ transplantation, and prenatal care.

Materials and Methods

Materials:
- Whole blood in EDTA anticoagulant
- Anti-A, Anti-B, and Anti-D (Rh) reagents
- Glass slides or microplates
- Mixing sticks or pipettes

Methods:
1. Forward Grouping: Mix patient's red blood cells with Anti-A and Anti-B reagents to determine antigen presence.
2. Reverse Grouping: Mix patient's plasma with known A and B cells to confirm results.
3. Rh Typing: Test red cells with Anti-D reagent to determine Rh status (positive or negative).
4. Interpretation: Match forward and reverse grouping for confirmation.
5. Quality Control: Use known positive and negative controls to ensure accuracy.

Results

- Possible ABO groups: A, B, AB, or O
- Rh typing: Positive (D antigen present) or Negative (D antigen absent)
- Discrepancies: Require repeat testing or advanced methods (e.g., indirect antiglobulin test)

Conclusion

ABO and Rh blood grouping is a fundamental pre-transfusion and prenatal test. Accurate determination prevents hemolytic transfusion reactions and hemolytic disease of the newborn (HDN). Results must be recorded and confirmed before transfusion or pregnancy management.