



Department:	Laboratory and Blood Bank		
Document:	Internal Policy and Procedure		
Title:	Red Cell Antigen Typing		
Applies To:	All Blood Bank Staff		
Preparation Date:	January 06, 2025	Index No:	LB-IPP-198
Approval Date:	January 20, 2025	Version:	2
Effective Date:	February 20, 2025	Replacement No.:	LB-IPP-198(1)
Review Date:	February 20, 2028	No. of Pages:	03

1. PURPOSE:

- 1.1 To determine the RBC antigens of an individual in special situations and to ensure the reliability of the result.

2. DEFINITIONS:

- 2.1 A blood group system is one or more antigens produced by alleles at a single gene locus (or at loci so closely linked that crossing over does not occur or is very rare).

3. POLICY:

- 3.1 The ABO and Rh blood groups are the most significant in transfusion practice. However, there are over 300 RBC antigens that are formally recognized internationally.
- 3.2 RBC antigens may be detected using IgM monoclonal reagents which cause direct agglutination or using IgG reagents that need to proceed to antihuman globulin (AHG) test.
- 3.3 Detection of RBC antigens (other than those of ABO and RH Systems) may be required in special situations like:
 - 3.3.1 Chronic recipient patients.
 - 3.3.2 Patients with positive Ab screening with Ab identification.
 - 3.3.3 Blood bags during search for a specific phenotype.
- 3.4 Results of antigen testing in recently transfused patients should be interpreted with caution because of the potential presence of donor red cells.

4. PROCEDURE:

4.1 Tube method:

- 4.1.1 Using IgM reagent:
 - 4.1.1.1 Prepare 2-5 % red cells suspension in isotonic saline.
 - 4.1.1.2 Add one drop of antisera to the corresponding tube.
 - 4.1.1.3 Add one drop of the prepared cell suspension to each test tube using a transfer pipette.
 - 4.1.1.4 Mix well and incubate at room temperature for 5 min., centrifuge at 900-1000 g for 20 seconds (the speed specified by the manufacture/ the centrifuge program specified for grouping).
 - 4.1.1.5 Gently resuspend the cell button and examine for agglutination.
 - 4.1.1.6 Read, interpret and record test result.
- 4.1.2 Using IgG reagent:
 - 4.1.2.1 Prepare 2-5 % red cells suspension in isotonic saline.
 - 4.1.2.2 Add one drop of antisera to the corresponding tube.
 - 4.1.2.3 Add one drop of the prepared cell suspension to each test tube using a transfer pipette.

- 4.1.2.4 Mix well and incubate at 37 °C for 30-60 min.
- 4.1.2.5 Wash cells four times with isotonic saline, decant supernatant completely and add 2 drops of anti-human globulin, mix and centrifuge at 900-1000 g for 20 seconds (the speed specified by the manufacture/ the centrifuge program specified for AHG).
- 4.1.2.6 Resuspend the cells and examine for agglutination.
- 4.1.2.7 Add coombs control cells to all negative AHG tests. Mix, centrifuge and check for the presence of agglutination. If agglutination is not present, repeat testing.
- 4.1.3 Interpretation:
 - 4.1.3.1 Agglutination of tested red cells constitute positive test results.
 - 4.1.3.2 A smooth cell suspension after resuspension of the cell button is a negative test result.
- 4.2 **Using Gel Microtyping System** (see chapter of "Column Technology & the Gel Microtyping System" - ID-Antigen Profile I, II, III).

5. MATERIALS AND EQUIPMENT:

- 5.1 **Forms and Records:**
 - 5.1.1 Blood group register
- 5.2 **Equipment:**
 - 5.2.1 As required for a specific method

6. RESPONSIBILITIES:

- 6.1 It is the responsibility of the technician/specialist in the pre-transfusion areas to perform the RBC antigens detection.


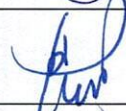



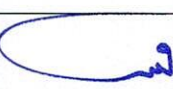
7. APPENDICES:

N/A

8. REFERENCES:

- 8.1 The Unified Practical Procedure Manual for Blood Banks in The Arab Countries, 1434-2013.
- 8.2 The Standard Policy for Blood Banks in The Kingdom of Saudi Arabia, 1st edition, 1435-2014.
- 8.3 National Standards for Clinical laboratories and Blood Banks, 1st edition, 2015.
- 8.4 AABB Technical manual, 18th edition, 2014.
- 8.5 AABB Standards for Blood Banks and Transfusion Services, 30th edition, 2016.
- 8.6 Mollison's Blood Transfusion in Clinical Medicine; 12th edition, 2014.
- 8.7 Modern Blood Banking & Transfusion Practices, 6th edition, 2012.

9. APPROVALS:

	Name	Title	Signature	Date
Prepared by:	Dr. Mohmmmed Amer	Blood Bank Physician		January 06, 2025
Reviewed by:	Dr. Kawther M. Abdou	Consultant & Lab. Medical Director		January 08, 2025
Reviewed by:	Ms. Noora Melfi Alanizi	Laboratory & Blood Bank Director		January 09, 2025
Reviewed by:	Mr. Abdulelah Ayed Al Mutairi	QM&PS Director		January 12, 2025
Reviewed by:	Dr. Tamer Mohamed Naguib	Medical Director		January 13, 2025
Approved by:	Mr. Fahad Hazam Alshammari	Hospital Director		January 20, 2025