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Blood Group Determination

Experiment 12 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To interpret a supervised ABO and RhD grouping demonstration using reagent reactions and controls.

Principle

In forward grouping, specific antibodies detect red-cell antigens through agglutination. Reverse ABO grouping checks plasma reactions with known reagent cells when applicable. RhD testing uses the specified anti-D method and controls. Classroom grouping is not a substitute for a transfusion laboratory work-up.

Requirements

- Instructor-prepared simulated grouping kit or authorised laboratory demonstration.
- Anti-A, anti-B and anti-D reagents, relevant controls and approved method instructions.
- Labelled reaction record; no unsupervised blood collection.

Procedure

1. Confirm identification

Check the demonstration material and reagent identity, expiry and quality-control status.

2. Set up reactions

The instructor follows the validated slide, tube or other method. Maintain separate reaction areas and avoid reagent carryover.

3. Read within the method

Record agglutination only within the specified time and conditions. Distinguish a true reaction from drying artefact or an invalid control.

4. Interpret forward ABO

Use the pattern in the table. Confirm that controls and any required reverse grouping agree; unresolved discrepancies need laboratory investigation.

5. Interpret RhD

A valid anti-D reaction supports D antigen detection under the method. A non-reactive result is interpreted by the laboratory's algorithm; do not invent a weak-D conclusion.

6. Record limitations

State that clinical transfusion decisions require authorised testing, compatibility assessment and the complete patient context.

Human Anatomy, Physiology and Pathophysiology I

Forward ABO Pattern

Anti-A	Anti-B	Forward ABO interpretation
+	–	A
–	+	B
+	+	AB
–	–	O

Reverse Grouping Check

In a suitable adult demonstration, group A plasma reacts with B reagent cells, group B plasma with A reagent cells, group O plasma with both, and group AB plasma with neither. Special age groups and discrepant reactions require the laboratory's procedure.

Observations and Record

Reagent	Reaction + / –	Control status
Anti-A	_____	_____
Anti-B	_____	_____
Anti-D	_____	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Fictional valid forward grouping: anti-A positive, anti-B negative. The forward ABO pattern supports group A.
- If anti-D is positive with a valid control, the teaching interpretation is RhD positive.
- If a control is invalid or forward and reverse ABO results disagree, record "unresolved" rather than assigning a definitive group.

Result

Forward ABO pattern: _____. Control validity: _____. Teaching ABO / RhD interpretation: ____ / _____, subject to the complete laboratory method.

Precautions

- Do not use a classroom or home grouping result for transfusion or pregnancy care.
- Read at the specified time; dried mixtures may mimic agglutination.
- Do not assume ABO and RhD cover every clinically relevant blood-group antigen.

Viva Questions and Answers

1. What does anti-A detect?

A antigen on red cells in a valid forward-grouping test.

2. Why use reverse ABO grouping?

It provides a complementary plasma-reaction check when appropriate.

3. Does group matching alone prove transfusion compatibility?

No; other antigens and antibodies and compatibility procedures matter.

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