Al Mustaqbal University
Department of Medical Laboratory Techniques
Edaan
Lab: Practical Blood Transfusion

Msc.Safa hammodi alshujery
MSc. Basma abidalkhalik

Lab 3

The ABO blood group system :

The ABO blood Group system is a classification system for blood that depend on the presence or absence of an A or B antigen on the red blood cell.

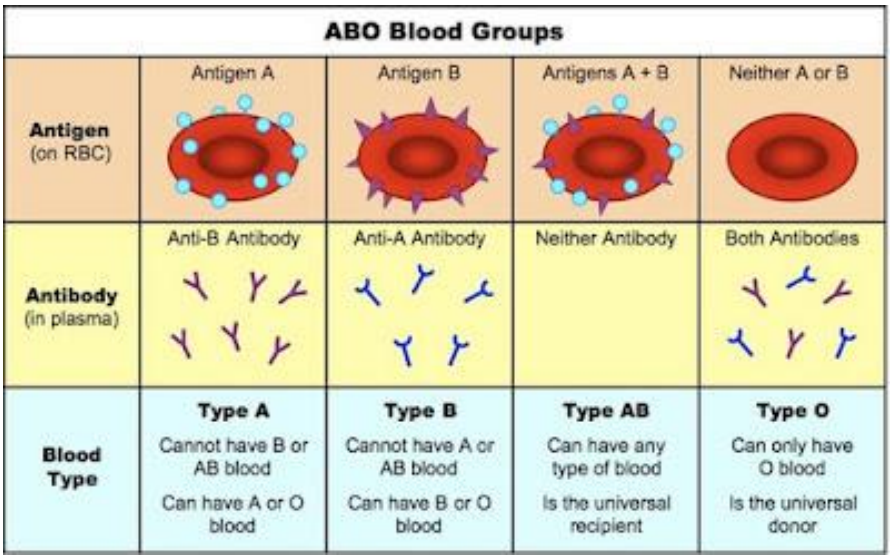
* If you inherited both types of antigens, then you ended up with type **AB blood,** if both antigens are absent, you would end up with type **O blood**.

ABO Typing (testing)

- Test to determine blood group of a person and its part of blood bank procedure.
- it's a classification of blood based on the presence or absence of antigens (A ,B)
- This test is based on agglutination Reaction

Agglutination reaction: it's an antigen – antibody Reaction in which antibodies react with antigen resulting in visible clumping of particles (agglutination)

Agglutination of RBCs is called **Heamagglutination**. Heamagglutination may lead to **RBC Hemolysis.**



Blood Type	Cell Antigen	Serum Antibodies	Donor
A	A	B	A or O
B	B	A	B or O
AB	AB	None	All
O	None	A and B	O

FIG: ABO BLOOD GROUP

Hemolysis

If an individual is transfused with an incomputable blood group, destruction of the red blood cells will occur and cause death of the recipient. In addition to the ABO system, the Rh blood group system can affect transfusion compatibility. An individual is either positive or negative the Rh factor; this is denoted by A+ or – after their ABO type, blood that is Rh- negative can be transfused into A person who is Rh + but an Rh - negative individual can create antibodies for Rh - positive RBCs

PRINCIPLE

Testing with both Anti-A and Anti-B is necessary to determine if red blood cells possess or lack A and/or B blood group antigens. Absence of agglutination is a negative test result, which indicates the corresponding antigen is not demonstrable. Agglutination of red blood cells with a given reagent is a positive test result, which indicates the presence of the corresponding antigen on the red blood cells.

(Forward Type)

Direct agglutination of A or B reagent red cells with the patient serum/plasma indicates the Presence of the appropriate ABO antibody. **(Reverse type)**.

Material: Test tubes, pipettes, physiologic saline, centrifuge, slide and cover slip.

1- Directions: Front Grouping (forward):

Steps

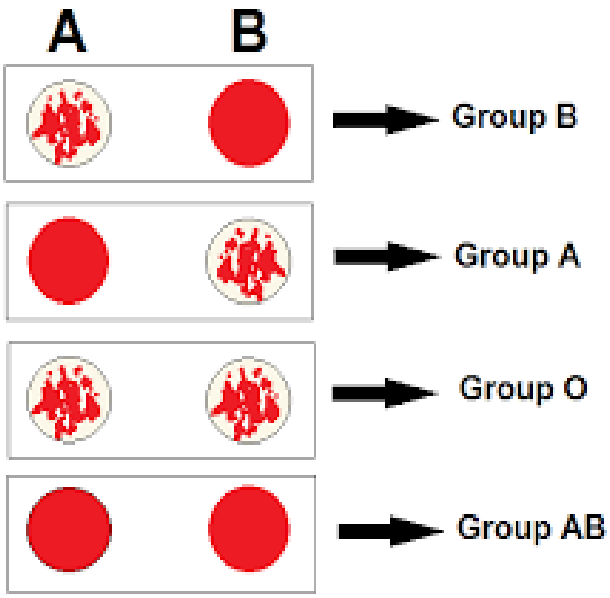
1. **Prepare a 3-5% suspension of red blood cells to be tested in isotonic saline.**
2. **Place 1 drop of Anti-A and Anti-B respectively, in two small, properly labeled test tubes**
3. **Add one drop of RBC suspension into the tube and mix.**
4. **Centrifuge the test tube**
5. **Completely resuspend cells and examine macroscopically for agglutination.**
6. **Grade and record results**

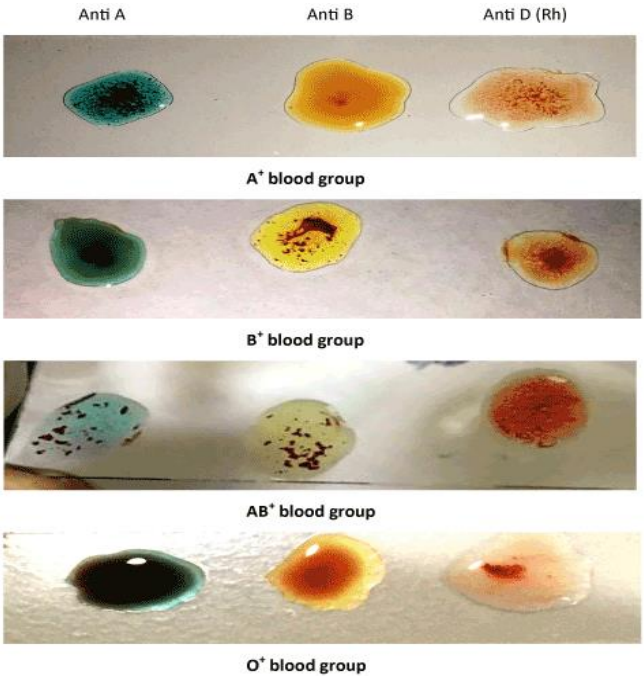
2- Reverse method:

Reagent: A cell, B cell. / Sample: plasma

Steps

1. **Label a test tube for each RBC reagent to be tested.**
2. **Place two (2) drops of the plasma into each labeled tube.**
3. **Add one (1) drop each of A cells and B cells to the appropriate tube.**
4. **Mix gently.**
5. **Completely resuspend cells and examine macroscopically for agglutination.**
6. **record results**


A
B
Group B
Group A
Group O
Group AB


Anti A
Anti B
Anti D (Rh)
A+ blood group
B+ blood group
AB+ blood group
O+ blood group