

Experiment #: 12

Determine your own blood group

APPARATUS

Normal saline, antisera A, B & D, pricking needle (blood lancet); porcelain tile/glass slides, dropper, application sticks or tooth picks, glass marking pencil, cover slips, microscope and spirit swab.

PRINCIPLE

Blood group means the presence of antigen on RBCs which is genetically determined for specific antibodies. RBCs contain different types of antigens (also known as agglutinogens) and plasma contains antibodies (also known as agglutinins). In order to detect blood group, RBCs are allowed to react with serum which contains corresponding agglutinins and so agglutination occurs. Saline suspension of red cells is mixed with antisera A, antisera B, antisera D and is looked for agglutination. Presence or absence of agglutination may be confirmed by microscope examination of the sample.

The reaction of antigen and corresponding antibody is shown in the Tables 12.1, 12.2 and 12.3:

Table 12.1: Different blood groups and their details.

Pheno type of Blood Group	Geno type of Blood Group	Antigen on RBC (Agglutigen)	Antibody in Serum (Agglutinin)
A	AA AO	A	Anti B
B	BB BO	B	Anti-A
AB	AB	AB	None
O	OO	None	Anti-A Anti-B
Rh +ve	DD Dd	D/Rh	None
Rh -ve	Dd	None	None

DIFFERENT TYPES OF BLOOD GROUP TESTING

- Conventional tube test
- Slide tests
- Reverse grouping in which the serum of the patients is used instead of RBCs. It decreases the error of blood grouping.

AB

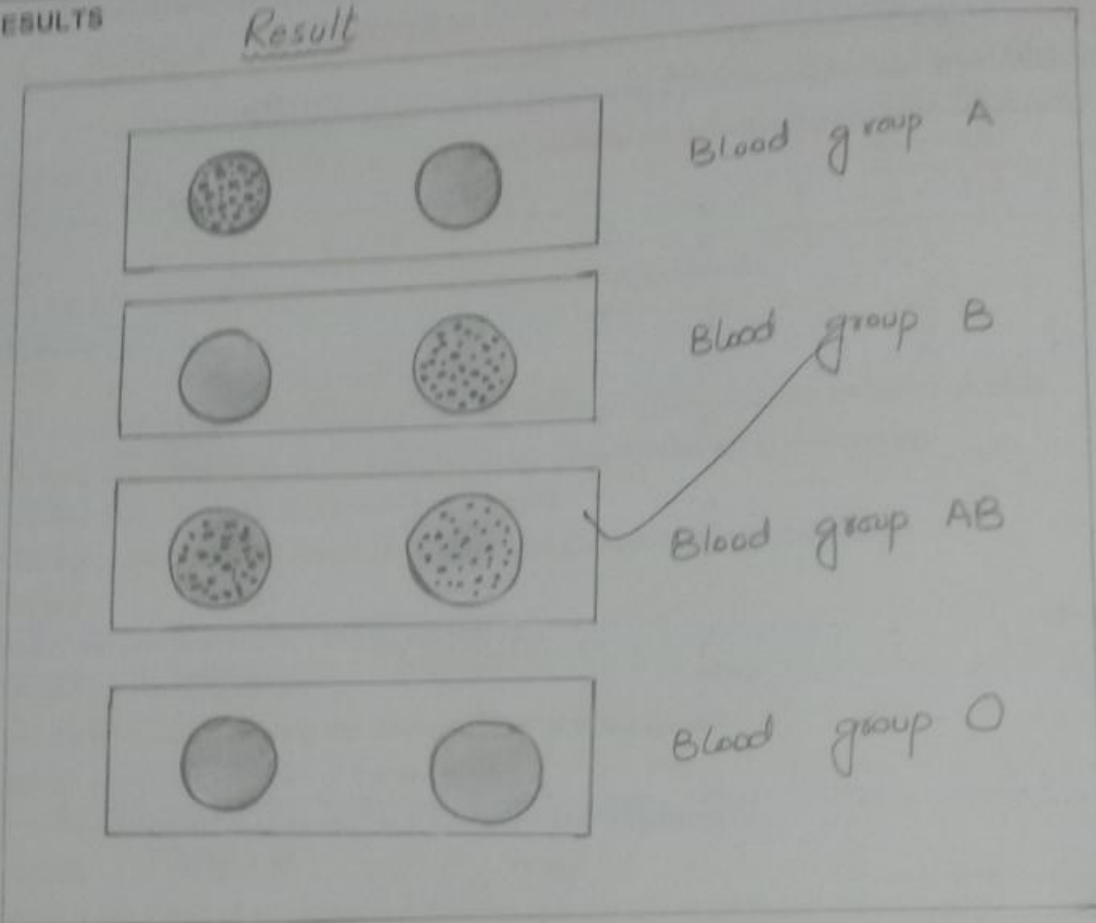
Anti A = Blue

Anti B = Yellow

Anti sera D = Yellow

RESULTS

Result



Patterns of Rxn in ABO Blood grp

Forward grouping		Reverse grouping		Blood Group
Anti-A	Anti-B	Cell with blood grp A	Cell with blood group B	
+	-	-	+	A
-	+	+	-	B
+	+	-	-	AB
-	-	+	+	O

RESULTS

Pattern of Reactions in Rh typing

Anti D	Rh typing
+	Rh +ve
-	Rh -ve

+ indicates agglutination & - indicates no agglutination

Antisera A	Antisera B	Antisera D	Blood group
+	-	+/-	A ⁺ /A ⁻
-	+	+/-	B ⁺ /B ⁻
+	+	+/-	AB ⁺ /AB ⁻
-	-	+/-	O ⁺ /O ⁻

RESULTS

Ans 1:- The ABO blood group system involves two antigens and two antibodies found in human blood. The two antigens are antigen A and antigen B. The two antibodies are antibody A & antibody B. The antigen are present on the RBC's and antibodies in Serum

Ans 2

The importance of knowing your blood group is to prevent the risk you recieving of an incompatible blood type at a time of need, such as doing a blood transfusion as during surgery. If two different blood types are mixed, it can lead to clumping of blood cells that can be potentially fatal.

Ans 3 :-

In transfusion of packed RBC's, individual type O Rh O⁻ blood are often called universal donor. Those with type AB Rh D⁺ blood are called universal recipient.

Ans 4

Trauma patients recieve energy transfusion of unmatched O Rh⁻ blood untill match blood is available

RESULTS

Ans 5:- If a woman who is Rh -ve pregnant with a fetus who is Rh +ve, her baby will make antibodies against the fetus blood. This can cause Rh diseases known as haemolytic diseases.

Ans 6:- If one has Rh +ve blood, he can get Rh +ve or Rh -ve transfusions, but people with Rh -ve should only get Rh -ve blood.

Ans 7:- If the fetus is Rh +ve, there is a high risk that some of his Rh +ve blood will get into the mother's blood stream during the pregnancy or delivery and mix with her Rh -ve blood. Left untreated, the mother's blood will make antibodies that attack the Rh +ve blood of the fetus.

Ans 8:- If the mother is Rh -ve, she will be tested for her Rh antibody titers. If she has not been sensitized, she is usually given a drug called Rhlg. Rh immunoglobins, also known as Rh -GAM. Rhlg destroys any Rh antibodies that enter the mother's circulation before her ovum system gets sensitized.

STUDENT'S NOTES

RE

9 Cross matching is a testing before blood transfusion to determine if the donor's blood is compatible with the blood of interested recipients.

10 O⁺ group is more common in general population constituting 37.4% of all blood groups.

11 Landsteiner's law of the agglutination is present in RBC's membrane the corresponding agglutination must be absent in the plasma.

Exceptions or is constituted by the cases in which the serum contain anti B while the blood cells contain the B antigen

12 Donor blood are destroyed by the recipient performed antibodies, resulting in the hemolysis of complication of mismatched blood transfusion.

13 Complication of mismatched blood transfusions

- (i) Non hemolytic transfusion Reaction
- (ii) Acute hemolytic transfusion Rxn
- (iii) Graft vs host disease.
- (iv) Transfusion associated circulatory overload
- (v) Transfusion associated acute lung injury.