#### A PROJECT REPORT

#### ON

## **BLOOD GROUP IDENTIFICATION**

#### SUBMITTED BY

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## A STUDY OF BLOOD GROUPS, IDENTIFICATION

**INTRODUCTION:** Since 1900, we have known about one of the most important blood groups, the ABO blood system, discovered by physician Karl Landsteiner. He later discovered the Rh blood group system in 1930, and with it the Rh antigen. The blood groups are defined by the presence or absence of a specific antigen on the surface of a red blood cell.

## AIMS AND OBJECTIVES:

By the end of activity student must able to know

- Naming of blood grouping
- Antigen and present on RBCs cell membrane
- Antibodies are present in the blood pleasure
- How to perform blood grouping?

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#### Donate and receive blood

#### ANTIGENS AND ANTIBODIES:

Your blood group is identified by antigens and antibodies in the blood. Antibodies are part of your bodies natural defence against invading substances such as germs.

Antigens are protein molecules found on the surface of red blood cells. Antibodies are proteins found in plasma. Antibodies recognize anything foreign in

Circulating in the blood plasma. Such individuals are called universal donors i.e, compatible with any blood group.

	De la companya de la company	Antibodies Present in Serum
Blood Group	Antigens preset on KDCs	В
А	A	Δ
В	В	Nil
AB	A and B	A and B
0	Nil	A and D

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#### The Rh System:

Additional antigens present on the surface of the RBCs are called Rh-factor. Those who have Rh factor are called Rh<sup>+ve</sup>, while those who do not have Rh- factor are called Rh-ve.t his means you can be one of eight blood groups.

A Rb A Rb	Positive $\rightarrow A^{+ve}$ Negative $\rightarrow A^{-ve}$
B Rb	Positive $\rightarrow B^{+ve}$
B Rb	Negative → B <sup>-ve</sup>
AB Rb	Positive $\rightarrow$ AB <sup>+ve</sup>
AB Rb	Positive $\rightarrow$ AB-ve
O Rb	Positive $\rightarrow O^{+ve}$
O Rb	Positive $\rightarrow O^{-ve}$

About 85% of the Indian population is Rb+ve, 15% of the population is Rb-ve

#### **REQUIREMENTS:**

- ✤ Clean glass slide
- Monoclonal antibodies / antiserum
  - for Anti A (Be coloured Blue)

Anti- B (Be coloured Yellow) and Anti- D

- ✤ Lancet
- Cotton
- ✤ Toothpicks
- Alcohol

## **PROCEDURE:**

The fingertip from where the blood is to be sampled is cleaned with cotton dipped in alcohol.

A gentle pressure is applied at the fingertip and picked with a lancet. Blood starts oozing out from the tip.

One drop of blood is allowed to fall in each of the three depressions of the glass slide.

The site of the fingertip prick is covered with a cotton ball and the blood flow is stopped by placing a thumb on it with a gentle pressure.

A drop of the anti- A antiserum is placed in the first spot. A drop of the anti-B is placed in the second spot. A drop of the anti-D is placed in the third spot. The contents in each well are mixed with separate tooth picks / glass rods.

In your body and alert your immune system to destroy it.

## TYPES OF BLOOD GROUPS:

Along with red blood cells, white blood cells and platelets, blood also contains antigens, part of the body's immune system. Antigens are proteins or sugars which covers the surface of the red blood cells. Some of these antigens define which blood group you belong to.

There are four ABO blood groups: A, B, AB and O which all refer to the presence of different antigens on the red blood cells.

**Blood group "A":** Individuals with blood group "A" have "A" Antigen on the surface of RBCs and "B" Antibodies circulating in the blood plasma.

**Blood Group "B":** Individuals with blood group B have "B" antigen on the surface RBCs and "A" antibodies circulating in the blood plasma.

**Blood Group "AB":** Individuals with blood group AB have both "A" and "B" antigens on the surface of the red blood cells (RBCs) and no antibodies circulating in the blood plasma. Such individuals are called as universal recipients i.e, can receive blood of any group.

**Blood Group "O":** Individuals with blood group o have neither "A" nor "B" antigens on the surface of RBCs and have both "A" and "B" antibodies.

The importance of Blood Grouping in transfusions.

The accurate Blood grouping is very important when it comes to having a blood transfusion. If blood is given to a patient that has a blood type that is incompatible with the blood type or the blood that the patient's blood which can be fatal. The patient's blood y can start producing antibodies that attacks the antigens on the blood cells in the blood that was given to the patient, causing reaction and rejection.

If agglutination is formed on the first spot, second spot and third spot. It is called – AB<sup>+ve</sup> Blood Group.



If agglutination is formed on the first and second spot, it is called – AB-ve Blood Group.



If agglutination is formed only on third spot and not formed on first and second sports, it is called O<sup>+ve</sup> Blood Group.



If agglutination is not formed on three spots, it is called - O-ve Blood Group



# Figures: Diagrammatic Representation of Identification of Blood Groups.

The slide is kept aside for some time and the results are observed. Look for agglutination.

#### **OBSERVATIONS:**

If agglutination is formed the first spot and third spot, it is called –  $A^{+ve}$  Blood Group.



If agglutination is formed the first spot only, it is called – A-ve Blood Group.



If agglutination is formed the second spot and third spot, it is called – B<sup>+ve</sup> Blood Group



If agglutination is formed only second spot and not formed on first and third spots, it is called – B<sup>-ve</sup> Blood Group.



Blood Group	Antigens on RBC	Can donate Blood To	Antibodies in Serum	Can Receive Blood From
A	Α	A, AB	Anti – B	A, O
В	В	B, AB	Anti – A	B, O
AB	A and B	AB	None	AB, O
0	None	A, B, AB, O	Anti-A and Anti- B	0

## **Relationships between Blood Groups and Antibodies**

#### **Conclusion:**

Of the eight main blood types. People with blood Group "O" have the lowest risk for heart disease. People with blood Group "AB" and "B" are the greatest risk, which could be a results of higher rates of inflammation for these Blood Groups. A Heart healing lifestyle is particularly important for people with Blood Groups "AB" and "B".

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