Practical Zoology

Lab. No. 5:- Blood Groups

Blood Group Test

A human blood cell includes red blood cells, white blood cells, and platelets. All these blood cells play a significant role in transportation, protection and regulation. Blood groups are mainly determined by the presence or absence of antigens and antibodies on the surface of our red **blood cells** or erythrocytes. The blood transfusion from the wrong blood group can be life-threatening.

The four major blood groups are: A, B, AB and O. The blood grouping system was discovered in the year 1901 by Karl Landsteiner- an Austrian biologist and immunologist.

Procedure

- Take a clean glass slide and draw three circles on it.
- Unpack the Monoclonal Antibodies (MAB) kit. In the first circle add Anti-A, to the second circle add Anti-B and to the third circle add Anti-D with the help of a dropper.
- Keep the slide aside safely without disturbing.
- Now wipe the ring finger with the alcohol swabs and rub gently near the fingertip, where the blood sample will be collected.
- Prick the ring fingertip with the lancet and wipe off the first drop of the blood.
- As blood starts oozing out, allow it to fall on the three circles of the glass slide by gently pressing the fingertip.
- Apply pressure on the site where it was pricked and to stop blood flow. Use the cotton ball if required.
- Mix the blood sample gently with the help of a toothpick and wait for a minute to observe the result.

Here is the chart which predicts the different types of blood groups along with its Rh factor.

Blood Type	A	B	O	AB
Rh-positive	A+	B+	O+	AB+
Rh-negative	A-	B-	O-	AB-

Precautions

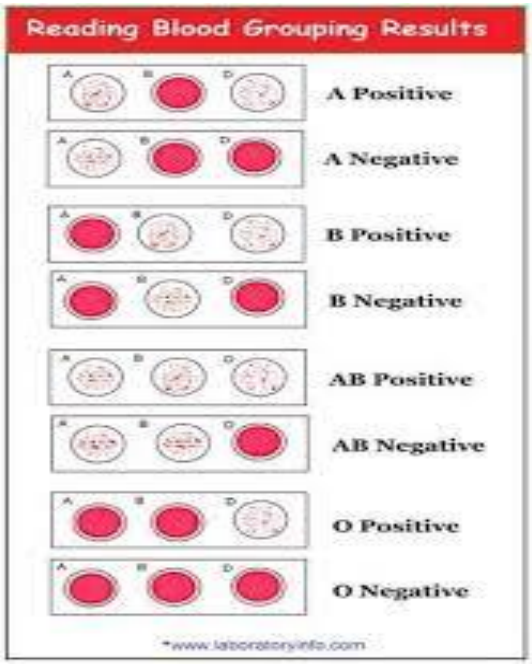
Discard the alcohol swabs, lancet, cotton balls and toothpick after their use. Drop all the materials, including the glass slide into the biohazard disposal container after observing the result.

As mentioned above, there are four major blood groups and eight different blood types, collectively called the ABO Blood Group System. The groups are based on the presence or absence of two specific antigens and antibodies– A and B:

١. Group A- Antigen A and Antibody B.
٢. Group B- Antigen B and Antibody A.
٣. Group AB- Antigen A and B both and no Antibodies
٤. Group O- No Antigens and both A and B Antibodies.

Other than this, there is a third kind of antigen called the Rh factor. Based on the presence or absence of this antigen (Rh factor), the four **blood groups** are classified into eight different blood types:

١. A positive – Presence of Rh+
٢. A negative- Presence of Rh-
٣. B positive- Presence of Rh+
٤. B negative- Presence of Rh-
٥. AB positive- Presence of Rh+
٦. AB negative- Presence of Rh-
٧. O positive- Presence of Rh+
٨. O negative- Presence of Rh-



A blood group test is a simple test used to determine the blood group of an individual. It is also called ABO typing. The ABO blood types are important as they are essential during the blood transfusions and to avoid further complications.

Type O blood group is called the universal donor, as it can be donated to recipients of any blood type. This is because type O blood group neither have A or B on the surface of the red blood cells.

Type AB blood group is called the universal recipient and can receive blood from the donors of any blood type. This is because type AB blood group have both A and B antigens on the surface of the red blood cells.

The presence of antigen on the surface of the blood cell and the antibodies in the blood plasma can determine the blood groups or blood type of an individual. Moreover, these blood types or groups are inherited from our parents. Each parent passes one allele for blood type to their child. Therefore a child could have the same blood type as one of their parents.

As per the records, AB-negative is considered to be the rarest blood type. It is difficult to say which blood type is the rarest in the world and it depends on the frequency in requirement of certain blood types, which varies widely in different parts of the world.