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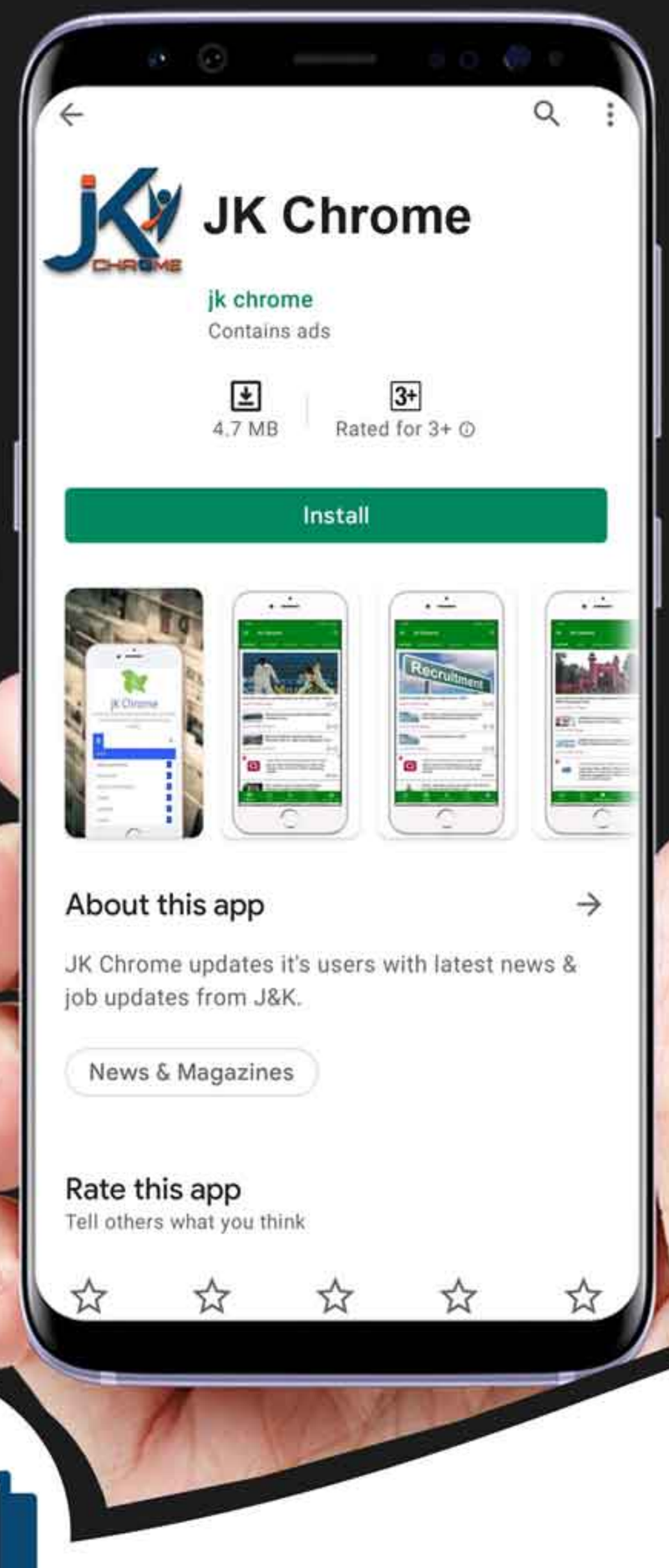

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Human Blood

1. Blood is a fluid connective tissue.

2. The quantity of blood in the human's body is 7% of the total weight.

3. This is a dissolution of base whose pH value is 7.4.

4. There is an average of 5-6 litres of blood in human body.

5. Female contains half litre of blood less in comparison to male.

Blood is consist of two part—

(A) Plasma and (B) Blood corpuscles.
(A) Plasma : This is the liquid part of blood. 60% of the blood is plasma. Its 90% parts is water, 7% protein, 0.9% salt and 0.1% is glucose. Remaining substances are in a very low quantity.
Function of plasma : Transportation of digested food, hormones, exeretory product etc. from the body takes place through plasma.

Serum : When Fibrinogen & protein is extracted out of plasma, the remaining plasma is called serum.

(B) Blood corpuscles : This is the remaining 40% part of the blood. This is divided into three parts —

(i) Red Blood Corpuscles (RBCs) (ii) White Blood Corpuscles (WBCs) and (iii) Blood Platelets.

(i) Red Blood Corpuscles (RBC) : Red Blood Corpuscles (RBC) of a mammal is biconcave.

1. There is no nucleus in it. Exception – Camel and Lama.

2. RBC is formed in Bone marrow. (At the embroynic stage its formation takes place in liver).

3. Its life span is from 20 days to 120 days.

4. Its destruction takes place in liver & spleen. Therefore, liver is called grave of RBC.

5. It contains haemoglobin, in which haeme iron containing compound is found and due to this the colour of blood is red.

6. Globin is a proteinous compound which is extremely capable of combining with oxygen and carbon dioxide.

7. The iron compound found in haemoglobin, is haematin.

8. The main function of RBC is to carry oxygen to all cells of the body and bring back the carbon dioxide.

9. Anaemia disease is caused due the deficiency of haemoglobin.

10. At the time of sleeping RBC reduced by 5% and people who are at the height of 4200 meters RBC increases by 30% in them.

(ii) White Blood Corpuscles (WBC) or Leucocytes : In shape and constitution this is similar to Amoeba.

Its formation takes place in Bone marrow, lymph node and sometimes in liver and spleen.

1. Its life span is from 1 to 2 days.

2. Nucleus is present in the White Blood Corpuscles.

3. Its main function is to protect the body from the disease.

4. The ratio of RBC and WBC is 600 : 1.

(iii) Blood Platelets or Thrombocytes : It is found only in the blood of human and other mammals.

1. There is no nucleus in it.

2. Its formation takes place in Bone marrow.

3. Its life span is from 3 to 5 days.

4. It dies in the Spleen.

5. Its main function is to help in clotting of blood.

Functions of blood :

(i) To control the temperature of the body and to protect the body from diseases.

(ii) Clotting of blood.

(iii) Transportation of O2, CO2, digested food, conduction of hormones etc.

(iv) To help in establishing coordination among different parts.

Clotting of Blood : Three important reactions during clotting of blood.

(i) Thromboplastin + Prothrombin + Calcium = Thrombin.

(ii) Thrombin + Fibrinogen = Fibrin.

(iii) Fibrin + Blood Corpuscles = Clot.

The formation of Prothrombin and Fibrinogen of the blood plasma takes place with the help of Vitamin K. Vitamin K is helpful in making clots of blood. Normally clotting takes the time from 2 to 5 minutes.

The compulsory protein in making clots of blood is Fibrinogen.

Blood Group of human : Blood Group was discovered by Landsteiner in 1900. For this, he was awarded with Nobel Prize in the year 1930.

1. The main reason behind the difference in blood of human is the glyco protein which is found in Red Blood Corpuscles called antigen. Antigen are of two types – Antigen A and Antigen B.

2. On the basis of presence of Antigen or Glyco Protein, there are four group of blood in human :

(a) That contains Antigen A – Blood Group A.

(b) That contains Antigen B – Blood Group B.

(c) That contains both the Antigens A and B - Blood Group AB.

(d) That contains neither of the Antigens - Blood Group O.

An opposite type of protein, is found in blood plasma. This is called antibody. This is also of two types – Antibody 'a' and Antibody 'b'.

Therefore, with the four groups of blood division of antibody is as under—

Blood Transfusion : Antigen 'A' and antibody 'a', Antigen 'B' and antibody 'b' cannot live together. In case of so happened these get most sticky, which spoils the blood. This is called agglutination of blood. Therefore, in blood transfusion adjustment of Antigen and Antibody should be done carefully so that agglutination of blood do not takes place.

Blood Group O is called Universal Donor because it does not contain any antigen.

Blood Group AB is called Universal Receptor because it does not contain any antibody.

Rh factor : In the year 1940, Landsteiner and Wiener discovered a different type of antigen in the blood. They discovered it in the Rhesus monkey; therefore, it is called Rh-factor. In the blood of that person it is found, their blood is called Rh-positive and in the blood of that person it is not found, is called Rh-negative.

At the time of blood transfusion Rh-factor is also tested. Rh+ is given to Rh+ and Rh– is given Rh-blood only.

If the blood of Rh+ blood group is transmitted to a person with Rh- blood group, then due to the less quantity for the first time there does not seem any bad effect but if this process is repeated then due to agglutination the person with Rh- blood group dies.

Erythroblastosis Foetalis : If the father's blood is Rh+ and the mother's blood is Rh- then the child to be bom dies at the pregnancy or short span of time after the birth. (This happens in the case of second issue).