

## ESTIMATION OF TOTAL RED BLOOD CORPUSCLES (RBC) COUNT

### **Background:**

**Red blood cell count is an enumeration of red cells or is any erythrocyte count.**

The red blood cells or erythrocytes are circular, biconcave, non nucleated cells containing haemoglobin and are embedded in blood plasma. After birth bone marrow is the main site of formation of red blood corpuscles. These are involved in acting as a carrier of oxygen and carbon dioxide. RBCs also maintain the ionic balance of human physiological system and maintains viscosity of blood. Various pigments like bilirubin and biliverdin are derived from RBC after their degradation.

The basic principle is that the blood specimen is diluted (usually 200 times) with red cell diluting fluid which does not remove the white blood cells but allows the red cells to be counted under magnification in a known volume of fluid. Finally, the number of cells in undiluted blood is calculated and reported as the number of red cells/ $\mu\text{l}$  of whole blood.

Blood cell counts can be performed using the **hemacytometer**.

Significance: The red cell count is the number of red cells present in one cubic millimeter of blood. The normal values of the red blood cell count are:

Woman : 4-5.5 million per cubic millimeter

Men : 4.5-6.0 million per cubic millimeter

Infants : 5- 6.5 million per cubic millimeter

Variations in normal values is observed in pregnancy, severe burns, diseased conditions and it also depends upon altitude. It drops below normal values in anaemia and leukemia and rises above the normal values in polycythemia and dehydration conditions. Therefore, the red cell count is useful in diagnosis.

**The aim of the experiment is to estimate red blood cell count of a blood specimen.**

### **REQUIREMENTS:**

Neubaur chamber, RBC pipette, Cover slip, RBC diluting fluid, Needle, spirit, cotton.

### **PROCEDURE:**

1. Sterilise the finger tip with cotton plug soaked in spirit and let it dry.
2. Take a bold prick with needle to have free flow of blood and draw the blood in a RBC

pipette upto 0.5 mark.

3. Dip the RBC pipette in red blood cell diluting fluid and suck up diluting fluid upto 101 mark.
4. Rotate the pipette equally in your hands to mix the solution well by swirling.
5. Take the haemocytometer and place it on the flat surface of the work bench. Place the cover slip on the counting chamber.
6. Allow a small drop of diluted blood, hanging from the pipette, to sweep into the counting chamber by capillary action. Make sure that there is no air bubble and the counting chamber must not be flooded.
7. Leave the counting chamber on the bench for 3 minutes to allow the cells to settle. Observe the cells by placing the counting chamber on the mechanical stage of the microscope.
8. Focus on the centre room of the chamber and start counting the cells from upper left corner of the room. It is advisable to complete all counts of the four squares and then move to the centre square, which is the fifth square to be counted.

#### **DATA ANALYSIS:**

No. of cells X Dilution factor X Depth factor X Total ruled area

Area count

Where;

Dilution factor = 200; Depth factor = 10; Total ruled area = 25; Area count = 5

**RESULT:** The number of red blood cells present in one  $\mu\text{l}$  of blood sample is \_\_\_\_\_

#### **REFERENCE:**

1. Haematology, Practical Human Anatomy And Physiology, S.R. Kale et al., Nirali Prakashan, Eight Edition, 2002, pp. 9-16