# THE CORPUSCULAR ELEMENTS OF BLOOD

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***Abstract****: Blood is a vital fluid tissue responsible for numerous physiological processes, including oxygen transport, immune defense, and overall cellular activity regulation. It consists of plasma and cellular components, namely erythrocytes (red blood cells), leukocytes (white blood cells), and thrombocytes (platelets). Erythrocytes play a crucial role in respiration due to their elasticity, flexibility, and hemoglobin content, while leukocytes function in immune defense through phagocytosis. The average human blood volume constitutes approximately 7.5% to 10% of body weight, with variations influenced by factors such as age, physical exertion, and environmental conditions. This paper explores the composition, functions, and physiological significance of blood, highlighting its essential role in maintaining homeostasis and overall health.*
***Keywords****: Blood, erythrocytes, leukocytes, thrombocytes, hemoglobin, phagocytosis, homeostasis.*

Blood is a fluid tissue with many various functions. Not only important physiological process takes place in the blood but it determines the activity of widely separated body cells. Blood is composed of plasma and the corpuscular elements which are called red corpuscles or erythrocytes, white corpuscles or leucocytes and blood platelets or thrombocytes. It is generally considered that no sex differences exist in the count of white corpuscles or leucocytes. The count of leucocytes in the blood of a healthy person is 4,500 to U,500 per cu mm (cubic millimetre).

When the number of white blood cells (WBC) is counted after mental or physical exertion, meals and mild activity it may increase to 10,000 and more per cu mm. It is estimated that the erythrocytes are the most numerous cellular elements, ranging from 4,000,000 to 5,000,000 per cu mm. The red blood cell count (RBC) may change with age; when the red blood cell count is done after physical exertion and emotions it may increase.

One knows that red corpuscles have two physical features which are very important in the function of respiration. They have great elasticity and flexibility.These features give them the possibility to pass through very small capillaries.

The discoid form of the corpuscle gives it a maximal surface for a given mass. The most important part of the red cell is its red colouring substance or hemoglobin which on an average forms about 3G% of its mass. The total blood volume is divided into circulating and reservoir volumes.

The average human blood volume is not less than 7.5% but not more than 10% of the body weight. It is generally stated that the circulating volume averages smaller in the females than in the males. The circulating volume of the blood depends on the changes of the air temperature. Blood is a fluid connective tissue with many various functions. Many important physiological process take place in the blood. It also determines the activity of separated body cells. Blood is composed of plasma and the cellular elements. They are red blood cells (erythrocytes), white blood cells (leukocytes) and blood platelets (thrombocytes).

About G5 per cent of all white cells are leukocytes. Their protoplasm contains granules. One characteristic of leukocytes is the lobed appearance of the nucleus. The number of lobes is thought to be an index to the cell’s age. About 45 per cent of all leukocytes have a nucleus of three lobes. The life span of a leucocyte is short, from 4 to 12 days.

The function of leukocytes is to protect against infection. After the skin is pierced and the wound becomes infected, leukocytes from all the body are attracted to this place. Arriving at the wound, they leave the blood stream. They engulf the bacteria within their own protoplasm. This process is called phagocytosis.

Erythrocytes are the most numerous cellular elements. Red corpuscles have two physical features which are very important in the function of respiration. They have great elasticity and flexibility. These features give them the possibility to pass through very small capillaries. The most important part of the red cell is its red substance or hemoglobin.

Blood plays a crucial role in maintaining homeostasis, transporting oxygen and nutrients to tissues while removing waste products. It also regulates body temperature and pH levels, ensuring optimal cellular function. The immune response is highly dependent on white blood cells, which identify and eliminate harmful pathogens. Hemoglobin within red blood cells not only facilitates oxygen transport but also helps in maintaining acid-base balance in the body. Platelets contribute to clot formation, preventing excessive blood loss after injury. Blood volume can fluctuate due to factors such as hydration levels, environmental conditions, and physical activity. Additionally, the dynamic nature of blood allows for continuous adaptation to the body's changing needs.The average human blood volume is not less than 7.5% but not more than 10% of the body weight.

Blood also plays a vital role in hormone transport, enabling communication between different organs and systems. It helps distribute essential substances such as glucose, amino acids, and fatty acids to cells while removing metabolic waste like carbon dioxide and urea for excretion.

The plasma contains proteins such as albumin, globulins, and fibrinogen, which contribute to maintaining oncotic pressure, immune responses, and blood clotting.

The production of blood cells, known as hematopoiesis, occurs primarily in the bone marrow, with erythropoietin, a hormone produced by the kidneys, regulating red blood cell production. The lifespan of red blood cells is approximately 120 days, after which they are broken down by the spleen and liver. The iron from degraded hemoglobin is recycled for new red blood cell formation.

Blood also contains electrolytes like sodium, potassium, calcium, and chloride, which are essential for nerve signaling, muscle contractions, and fluid balance. The ability of blood vessels to constrict or dilate regulates blood pressure and circulation efficiency. Additionally, blood plays a role in detoxification, as the liver filters harmful substances before they are excreted by the kidneys.

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