

Editorial Note on Hematology

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Editorial Note

Blood is a connective tissue whose matrix is fluid.

It is composed of:

1. Red corpuscles,
2. White cells,
3. Platelets,
4. Blood plasma.

It is transported throughout the body within blood vessels.

Blood is sometimes considered to be a fluid connective tissue because of the mesenchymal origin of its cells and a low ratio of cells to liquid intercellular substance, the blood plasma.

- In human adults about 5 liter of blood contribute 7-8 % to the body weight of the individual.
- The contribution of red blood cells (erythrocytes) to the total volume of the blood (haematocrit) is about 43%.
- Erythrocytes are the dominant (99%) but not the only type of cells in the blood.
- We also find leukocytes and, in addition, blood platelets. Erythrocytes, leukocytes and blood platelets are also being referred to as the formed elements of the blood.
- Erythrocytes and blood platelets perform their functions exclusively in the blood stream.
- In contrast, leukocytes reside only temporarily in the blood.
- Leukocytes can leave the blood stream through the walls of capillaries and venules and enter either connective or lymphoid tissues.

Hemopoietic Cells:

The basis of hemopoiesis is a small population of self-replicating stem cells, which ultimately can generate all types of blood cells. Their progeny may develop into either lymphocytic stem cells or pluripotent haemal stem cells (colony-forming unit - stem cell - CFU-S). The latter type gives rise to stem cells which can form the major groups of blood cells other than lymphocytes. Depending on their progeny it is possible to differentiate

Usually biconcave and circular outline, devoid of a nucleus. Number in man varies between 5 and 5.5 million per cubic mm of blood. Erythrocytes carry oxygen from the lungs to the tissues and carbon dioxide from the tissues to the lungs.

When red cell membranes are damaged, hemoglobin and other dissolved contents may escape from the cells, leaving the membranous structures as "ghosts."

This process, called hemolytic, is produced not only by the osmotic effects of water but also by numerous other mechanisms.

These include physical damage to red cells, as when blood is heated, is forced under great pressure through a small needle, or is subjected to freezing and thawing; chemical damage to red cells by agents such as bile salts, detergents, and certain snake venoms; and damage caused by immunologic reactions that may occur when antibodies attach to red cells in the presence of complement.

When such destruction proceeds at a greater than normal rate, hemolytic anemia results.

Neutrophil:

Compare sizes of the neutrophil and the erythrocyte.

Lobulated nucleus, individual lobes connected by thin bridges.

Cell type-specific cytoplasmic granules are small.

Neutrophils constitute 40 to 75 per cent of the total white blood cell count.

The number of neutrophils increases in inflammation, and they act as the first line of defense against invading pyogenic organisms.

Eosinophil:

Nucleus bilobed. Cell type-specific cytoplasmic granules are large and uniform in size and stain intensely red with acid dyes. They constitute 1 to 3 per cent of total white count and increase in number in allergic states and in parasitic infections.

Basophil:

The nucleus is large but less lobulated than other white blood cells. Cell type-specific cytoplasmic granules are large and variable in size and have a strong affinity for basic dyes. They constitute 0.5 to 1 per cent of white count and are believed to synthesize the heparin and histamine found in circulating blood.

Lastly I would like to express gratitude towards all editors, reviewers and authors for the contribution of their time and efforts towards our journal.

