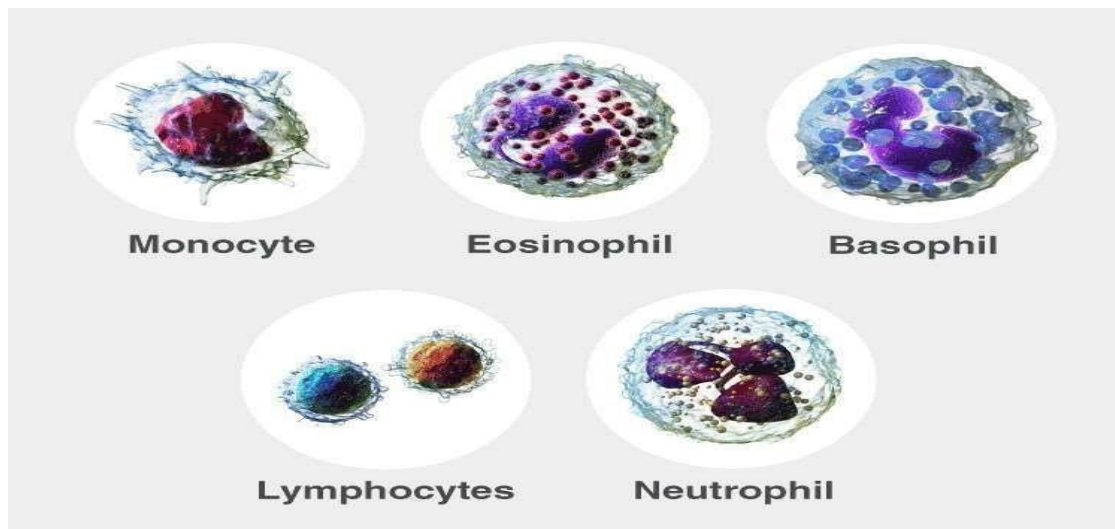


HUMAN ANATOMY AND PHYSIOLOGY-I, BP-101(T)**UNIT-III (Body fluids and blood)****CLASS:2****TOPIC - Body fluids- composition and functions of Blood**

- The nucleus is 2 to 5 lobed and the cytoplasm has very fine granules.
- Neutrophil helps in the destruction of bacteria with lysosomes, and it acts as a strong oxidant.
- Neutrophils are stained only using neutral dyes. Hence, they are called so.
- Neutrophils are also the first cells of the immune system to respond to an invader such as a bacteria or a virus.
- The lifespan of these WBCs extends for up to eight hours and is produced every day in the bone marrow.

Agranulocytes:

They are leukocytes, with the absence of granules in their cytoplasm. Agranulocytes are further classified into monocytes and lymphocytes.

Monocytes:

- These cells usually have a large bilobed nucleus, with a diameter of 12 to 20 micrometres.
- The nucleus is generally half-moon shaped or kidney-shaped and it occupies 6 to 8 per cent of WBCs.

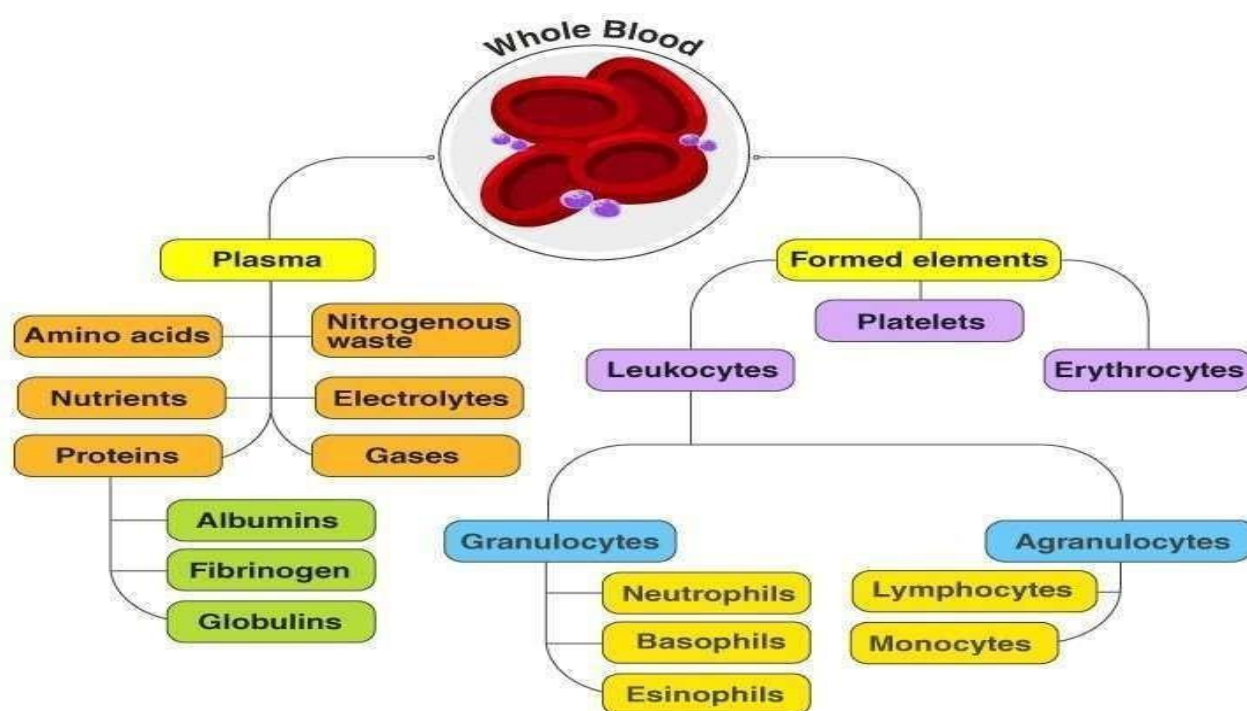
- They are the garbage trucks of the immune system.
The most important functions of monocytes are to migrate into tissues and clean up dead cells, protect against blood borne pathogens and move very quickly to the sites of infections in the tissues.
- These white blood cells have a single bean-shaped nucleus, hence referred to as Monocytes.

Lymphocytes:

- White blood cells or *leukocytes*, are cells of the immune system involved in defending the body against both infectious disease and foreign materials.
- They are produced and derived from multipotent cells in the bone marrow known as hematopoietic stem cells.
- Leukocytes are found throughout the body, including the blood and lymphatic system.
- There are a variety of types of white blood cells that serve specific roles in the human immune system.
- They play a vital role in producing antibodies.
- Their size ranges from 8 to 10 micrometres.
- They are commonly known as natural killer cells.
- They play an important role in body defence.
- These white blood cells are colourless cells formed in lymphoid tissue, hence referred to as lymphocytes.
- WBCs constitute approximately 1% of the blood volume ie., 4500-11000 cells/mcL
- There are two main types of lymphocytes – B lymphocytes and T lymphocytes.
- These cells are very important in the immune systems and are responsible for humoral and cell-mediated immunity.

Platelets (Thrombocytes):

- Thrombocytes are specialized blood cells produced from bone marrow.
- Platelets come into play when there is bleeding or haemorrhage.
- They help in clotting and coagulation of blood. Platelets help in coagulation during a cut or wound.
- The normal range (99% of population analyzed) for platelets is 150,000 to 450,000 cells/mcL



The functions of blood include:

- **Transport:** Blood carries oxygen, nutrients, hormones, and waste products to and from the body's tissues and organs.
- **Protection:** White blood cells and antibodies in the blood help to defend against infections and diseases.
- **Regulation:** Blood helps to regulate body temperature, pH balance, and electrolyte balance.
- **Clotting:** Platelets in the blood help to form clots that prevent excessive bleeding when an injury occurs.
- **Wound healing:** Blood transports immune cells and growth factors to injured tissues, which helps to promote healing.

Overall, blood is a vital component of the human body and plays many essential roles in maintaining health and vitality.

IMPORTANT QUESTIONS:

2M QUESTIONS:

1. Define blood.
2. Classify blood groups.
3. What is haemoglobin.
4. Define Artery and Vein.
5. Define: 1. blood Pressure 2. Hematopoiesis 3. Erythropoiesis 4. Anaemia.
6. Explain blood transfusion.
7. Explain reticulo-Endothelial System.

8. Define blood coagulation and enlist its pathways.
9. What is lymph.

5M QUESTIONS:

- 1) Write about coagulation of blood.
- 2) Explain the process of haemoglobin formation in brief.
- 3) Write about composition and functions of blood.
- 4) Write a note on anemia with its types.
- 5) Write an explanatory note on lymphatic system.
- 6) Discuss about ABO blood group system.

10M QUESTIONS:

- 1) Write about coagulation of blood.
- 2) Write about composition and functions of blood.
- 3) Write an explanatory note on lymphatic system.
- 4) Discuss about ABO blood group system.

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