Department of Dentistry

Second Class

General Histology

Lab: 3

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Blood

Blood is a fluid connective tissue. It consists of a liquid matrix called as the plasma, in which blood cells are present. It travels all around the body in blood vessels. So blood helps in the transport of gases, nutrients, hormones as well as the elimination of the waste materials.

Composition of blood:

- Blood is a circulating tissue consisting of three type of cell

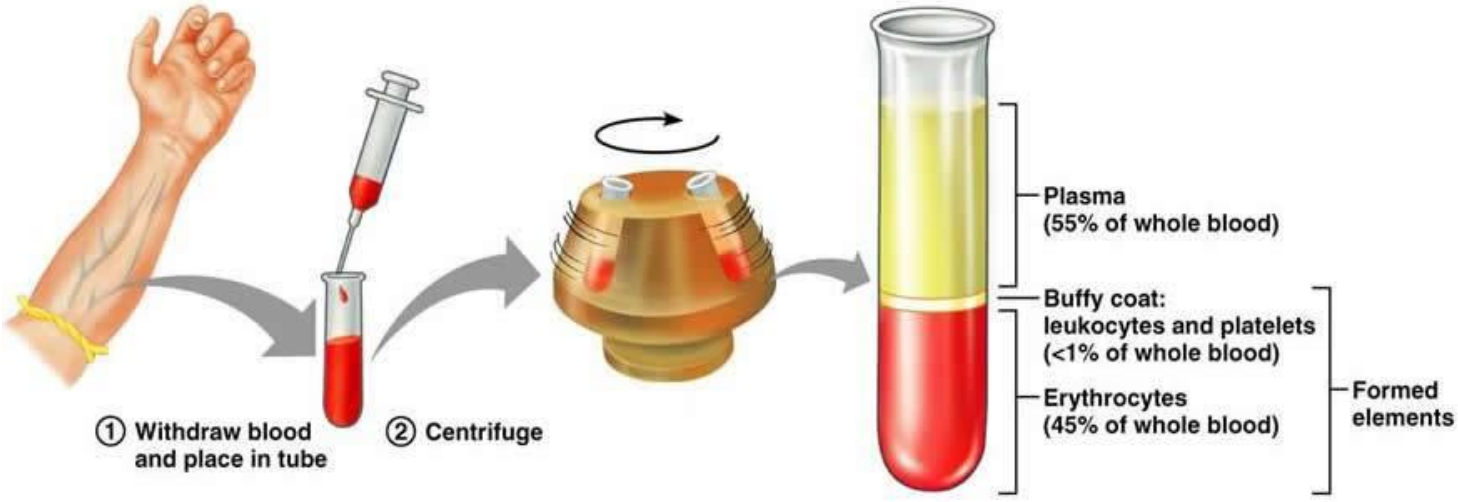
1. Red blood cell erythrocytes
2. White blood cell leukocytes
3. Platelets thrombocyte

- The cells listed above are suspended in a liquid known as plasma.

Collection of plasma

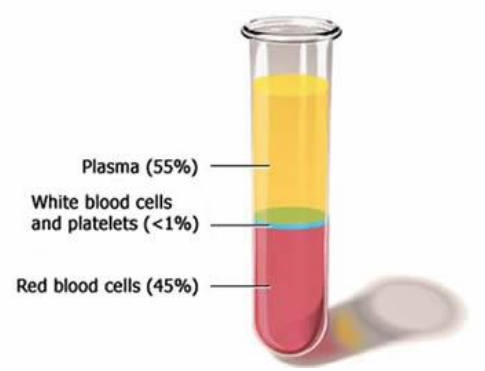
- **Plasma** is produced when whole blood is collected in tubes that are treated with an anticoagulant. EDTA- Treated or citrate-treated. Heparinized tube are indicated for some application.
- The blood does not clot in the plasma tube. The cell are removed by centrifugation. Centrifugation for 10 minutes at 1000-2000 xg using refrigerated centrifuge.
- The supernatant, designated plasma is carefully removed from the cell pellet using a Pasteur pipette.

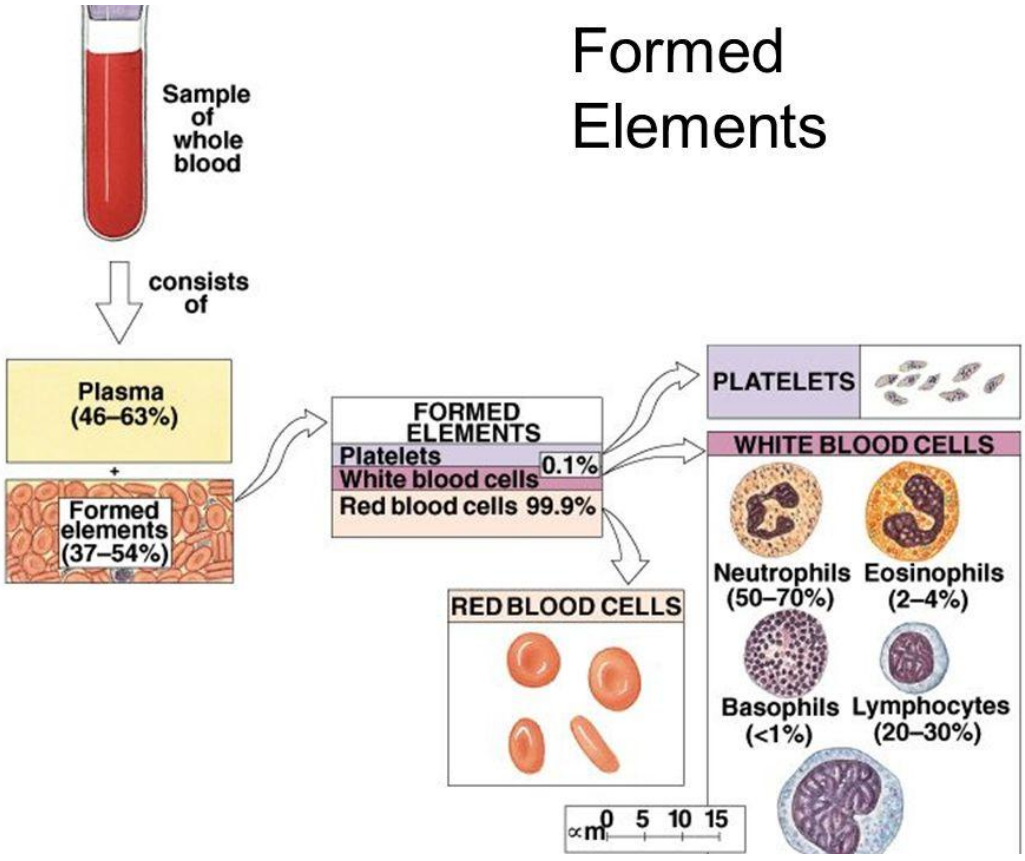
Preparation of plasma



Composition of blood

- The blood is made up of cells that are suspended in liquid called plasma
- Plasma makes up 55% of blood
- Plasma is made of 90% water and 10% proteins, lipids, carbohydrates, amino acids, antibodies, hormones, electrolyte, waste, salts and ions.
- Blood cell make up the remaining 45% of the blood.
- Red blood cell make up 99% of the blood cell.
- White blood cells and platelets make up the other 1%





Red blood cell

- Red cells, or erythrocyte, are relatively large microscopic cells without nuclei.
- Most abundant cell in the blood.
- Biconcave discs shape increases surface area/volume ratio.
- Hemoglobin is found in the RBC

Preparation of serum

- Serum is the liquid fraction of whole blood that is collected after the blood is allowed to clot
- The clot is removed by centrifugation and the resulting supernatant, designated serum, is carefully removed using a Pasteur pipette.
- After collection of the whole blood, allow the blood to clot by leaving it undisturbed at room temperature . this usually takes 15-30 minutes. Remove the clot by centrifuging at 1000-2000 xg for 10 minutes in a refrigerated centrifuge.

Composition of blood

Each type of blood cell performs a different function.

White blood cell

White cell, or leukocyte, exist in variable numbers and types but make up a very small part of bloods volume-normally only about 1% in healthy people.

- Leukocytes are not limited to blood. They occur elsewhere in the body as well, most notably in the spleen, liver, lymph glands.
- Most are produced in our bone marrow from the same kind of stem cells that produce red blood cells and others are produce in the thymus gland, which is at the base of the neck.

Red blood cells (erythrocyte)

Red blood cells are biconcave discs