



HEMATOLOGY - FIRST COURSE

LAB -1- INTRODUCTION TO HEMATOLOGY

Sawa University

جامعة ساوة الاهلية

College of health and medical techniques

كلية التقنيات الصحية والطبية

Department of Medical Laboratories

قسم تقنيات المختبرات الطبية

Third Stage

المرحلة الثالثة

محاضرة رقم ١

Lecture No. 1

الجانب العملي

Practical

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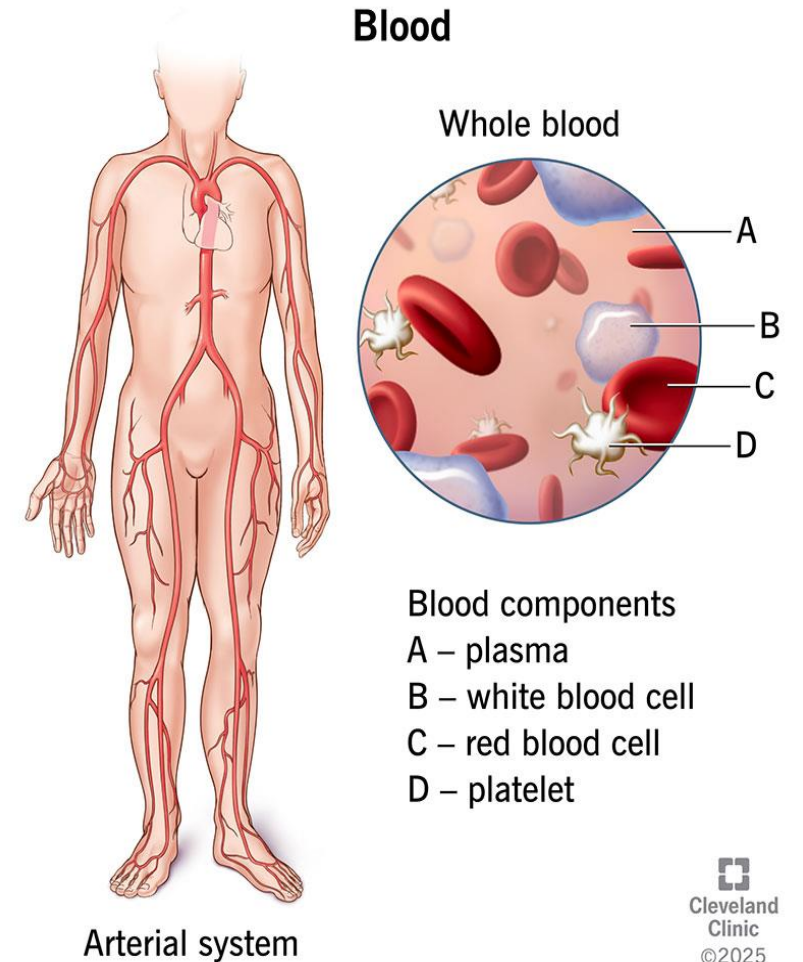
HEMATOLOGY

Hematology is a branch of medicine concerning the study of blood, blood-forming organs such as bone marrow, and blood-related disorders and diseases.

he word "hematology" comes from the Greek words haima (meaning "blood") and -logy (meaning "the study of").

Blood

Blood is a vital red fluid tissue that flows through the blood vessels of humans and animals. It consists primarily of plasma, red blood cells, white blood cells, and platelets. Its main function is to transport oxygen and nutrients to the body's cells, remove waste products such as carbon dioxide, and protect the body from infection.

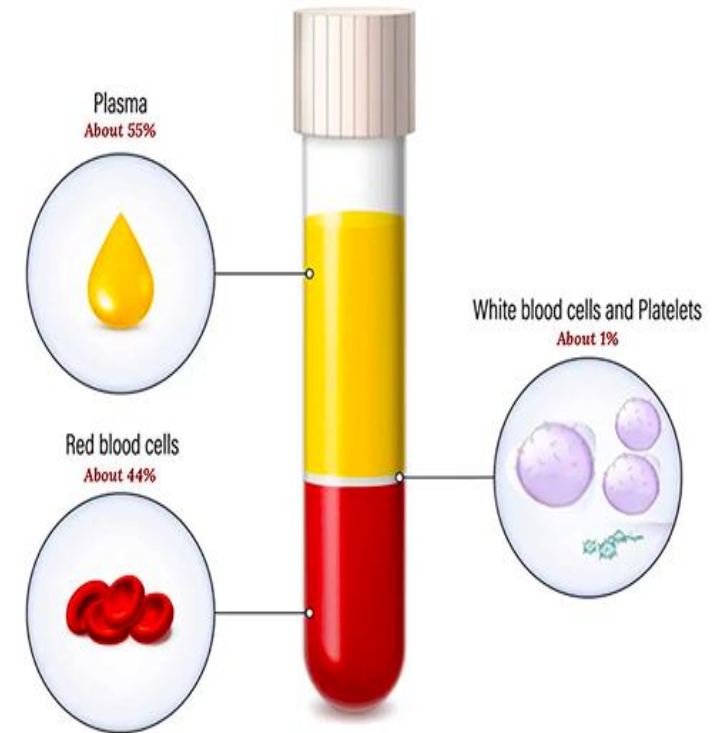


Blood Components

The main components of blood include

- ❖ Plasma
- ❖ Red blood cells
- ❖ White blood cells
- ❖ Platelets

Composition of Blood



Blood Components

- ❖ **Plasma:** A yellowish, liquid portion that makes up about 55% of blood. It contains water, proteins (like albumin, antibodies, and fibrinogen), electrolytes, nutrients, hormones, and waste products.
- ❖ **Red Blood Cells (Erythrocytes):** Disc-shaped cells containing hemoglobin that carry oxygen from the lungs to the body's tissues and transport carbon dioxide back to the lungs.

Blood components

- ❖ **White Blood Cells (Leukocytes):** Part of the immune system, these cells defend the body against infections, foreign bodies, and abnormal cells.
- ❖ **Platelets (Thrombocytes):** Small cell fragments that are crucial for blood clotting, helping to seal wounds and prevent excessive bleeding.

Function of Blood

Function of Blood

TRANSPORTATION

- Respiration
- Nutrient carrier from GIT
- Transportation of hormones from endocrine glands
- Transports metabolic wastes

REGULATION

- Regulates pH
- Adjusts and maintains body temperature
- Maintains water content of cells

PROTECTION

- WBC protects against disease by phagocytosis
- Reservoir for substances like water, electrolyte etc.
- Performs haemostasis

Properties of Blood

Color: Blood is red due to the presence of hemoglobin. The color of blood in the arteries differs from that in the veins. It is bright red in the arteries due to the presence of oxygen, while it is dark red in the veins due to the presence of carbon dioxide.

Temperature: Body temperature is considered constant, with some slight variations in organ temperature, based on the organ's need for heat to enable it to perform its main functions. For example, the brain's temperature is less than 39°C, while the liver's temperature is around 40 to 41°C.

Properties of Blood

Density: density depends on the presence of dissolved substances in blood plasma, such as protein and red blood cells. Blood density in men ranges from about 1.057 to 1.067 grams/cm³, and in women it ranges from about 1.051 to 1.061 grams/cm³.

Viscosity: It represents the force of blood friction against the walls of arteries and veins, to maintain blood pressure. It depends primarily on the proteins present in the plasma. Viscosity ranges around 4.7 in men, and 4.3 in women.

Properties of Blood

Osmotic pressure: is caused by the presence of salts and crystals in the plasma, and its function is to maintain the balance of water and salts inside and outside the cell in the arteries and blood vessels.

Blood hydrogen concentration (PH): Blood is considered an alkaline solution, and its density is 7.35 in the veins, 7.4 in the arteries, and about (7 to 7.2) inside the cell.

Any questions?

*Thank
You*