Physiology

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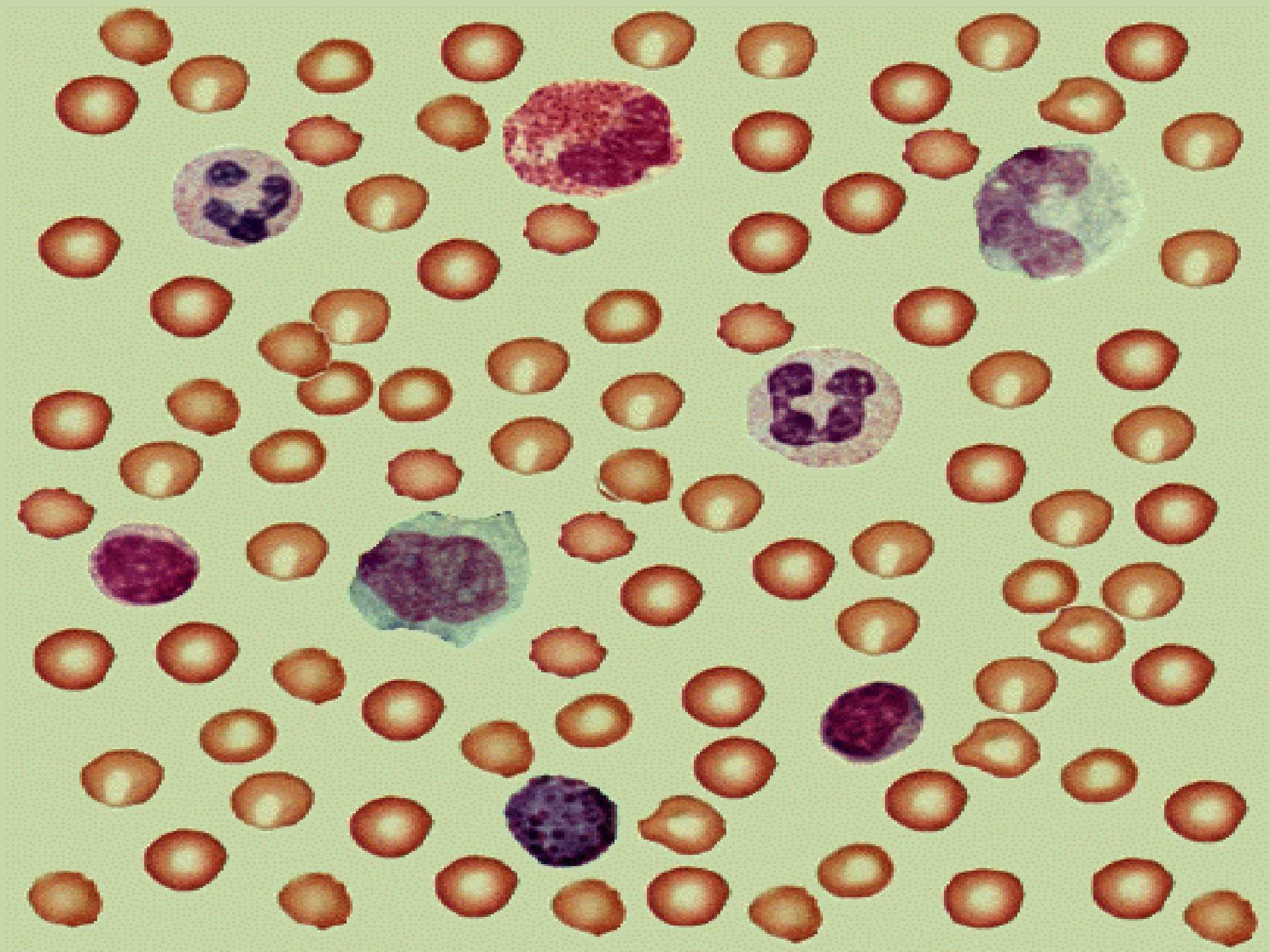
Blood:

Is a viscous fluid which circulates through a closed system of blood vessels.

Composition of blood

- Fluid portion …..**plasma**

- Cellular element which included :
  - **Red blood cell** (Erythrocytes)
  - **White blood cell** (Leukocytes)
  - **Platelets** (Thrombocytes)



plasma

- It contain protein ,organic and inorganic substance of blood

- There are three type of protein in plasma

- **Albumin** .
  - Concentration of 4.5 gm/dl
  - Its function to cause osmotic pressure at capillary membrane.

- **Globulin.**

➢ Concentration of 2.5 gm/dl

➢ Are divided to α , β and γ

➢ Its function transporting substances.

- **Fibrinogen.**
- Concentration of 0.3 gm/dl

- Its basic importance in blood clotting

Red blood cell (Erythrocytes)

Number, shape and size

- In men, the average 5.2 millions
- In women ,the average 4.7 millions
- Biconcave discs , diameter about 7.8 micrometer and average volume 90-95 mm^3

Function

- Transport hemoglobin which carries the O_2 and CO_2

Concentration of Hb in RBC

- Is about 34%

Genesis of R.B.C.

R.B.C. are derived from the cell know as **Hemocytoblast** which is formed from **stem cells** located in bone marrow.

polycythemia

- The increase of R.B.C. count under normal value

- There are two types of polycythemia .

- **Physiological**

  - Too little oxygen in atmosphere
  - Failure of delivery of oxygen to tissue
  - The blood count 6-7 million/mm^3

- **Pathological**

➢ Pathological condition such as cancer

➢ The blood count 7-8 million/mm^3

Anemia

- Deficiency of R.B.C., which can be caused either by too rapid loss or by too slow production of R.B.C

- There are different types of anemia .

- **Blood loss anemia**

  - Plasma replaced quickly
  - R.B.C. take few weeks

- **Bone marrow aplasia**

  - Mean loss of bone marrow function

  - Due to drug poisoning or irradiation

- **Hemolysis of R.B.C.**

➢ Due to

1. drug poisoning
2. Hereditary diseases
3. Erythroblastosis fetalis

- **Thalasemia**
  - Due to deficiency of globulin

- **Maturation failure (pernicious anemia)**
  - Due to lack of vitamin B12 or folic acid

Destruction of R.B.C.

- R.B.C are delivered from the bone marrow into the circulatory system an average of 120 days.

Blood functions

1. Transport gases **O2** and **CO2**
2. Delivery the nutrients
3. Distribution of heat
4. Regulation of ions concentration and PH
5. Protective function


Thank
You