

Ministry of Higher Education and Scientific Research

Al-Mustaqbal University College

Intelligent Medical Systems Department



Subject: General Biology

Class: 1st

Lecture Number: 5

Lecture Title: A granular Leukocytes

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(2) – A granular leucocytes :-

- This cells have cytoplasm that appears homogenous & nuclei that are spherical to reniform in shape.

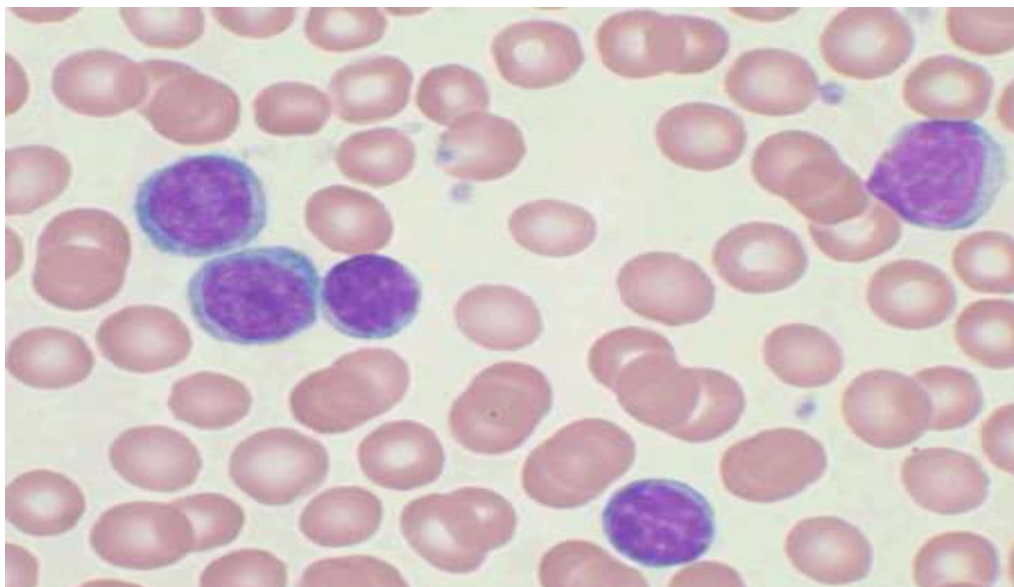
There are two types of a granular leucocytes :-

(a):- Lymphocytes:-

-Lymphocytes are the second most common white cell in the peripheral blood, with arrange of 20 to 40 percent of circulating white blood cells.

-Typically, lymphocytes are much smaller than monocytes (10-12 micron in diameter).

-The majority of the lymphocytes are small in size, spherical cells, with small amount of cytoplasm surrounding dense, round nucleus.



-Most of lymphocytes are formed in lymph nodes, thymus & spleen.

-Lymphocytes are divided into two major populations, which play distinct roles in specific immunity .

-One of the population is responsible for forming the activated lymphocytes that provide cell - mediated immunity, which called T lymphocyte.

-The other population is for forming the antibodies that provide humoral immunity, which is called B-lymphocytes.

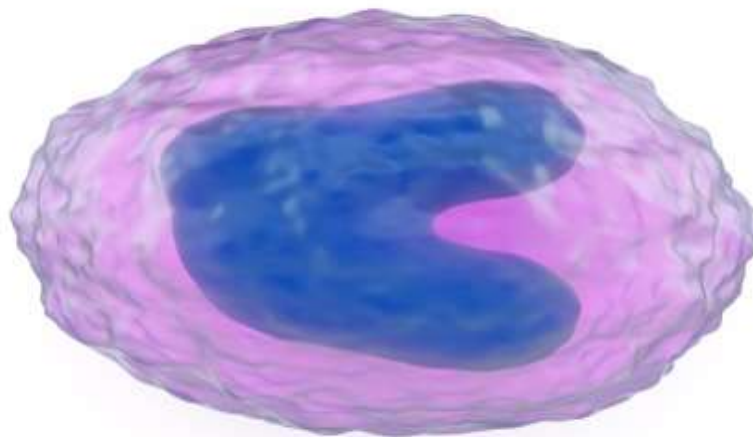
-In the blood 70 – 80% of small lymphocytes are T cells & 15 – 20% are B cells.

(b):-Monocytes:-

-Monocytes are phagocytic leucocytes that play a major role in defense against pathogenic organism & foreign cells.

-The monocytes is larger than neutrophils, & have abundant cytoplasm in relation to the nucleus.

-The nuclei of monocytes frequently are kidney shaped.



-Monocytes enter the circulation from the bone marrow but after about 24 hours, they enter the tissues to become tissue macrophage.

-The tissue macrophage system has generally been called the reticuloendothelial system.

-The macrophages migrate in response to chemotaxis stimuli & engulf & kill bacteria by phagocytosis.

(3) – Platelets:-

-Blood platelets are small protoplasmic disks, which are non-nucleated, granulated bodies, constitute about $300,000\text{m}^3$ of circulating blood.



-The primary role of the blood platelet is in the arrest of blood loss. Adequate number of Functionally normal platelets are essential for optimal hemostasis.

Blood functions

(1):-Transport of nutrients from digestive tract to tissues.

(2):-Transport of metabolites (eg . lactic acid from muscle to liver) .

(3):-Transport of excretory products from tissues to excretory organs (urea in liver to kidney).

(4):-Transport of gases (O_2 & CO_2) between respiratory organs & tissues.

(5):-Transport of hormones & vitamins.

(6):-Transport of heat from deeper organs to surface.

(7):-Coagulation, serves to protect against blood loss.

(8):-Forms antibodies which helps to resisting the various specific infections.