Lab 4 Differential leucocytic count

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Indication:

1. As apart of routine health care
2. Prescence on symptoms and signs of infections or inflammation
3. Abnormal result of Complete blood count
4. Prescence of signs and symptoms of autoimmune disease

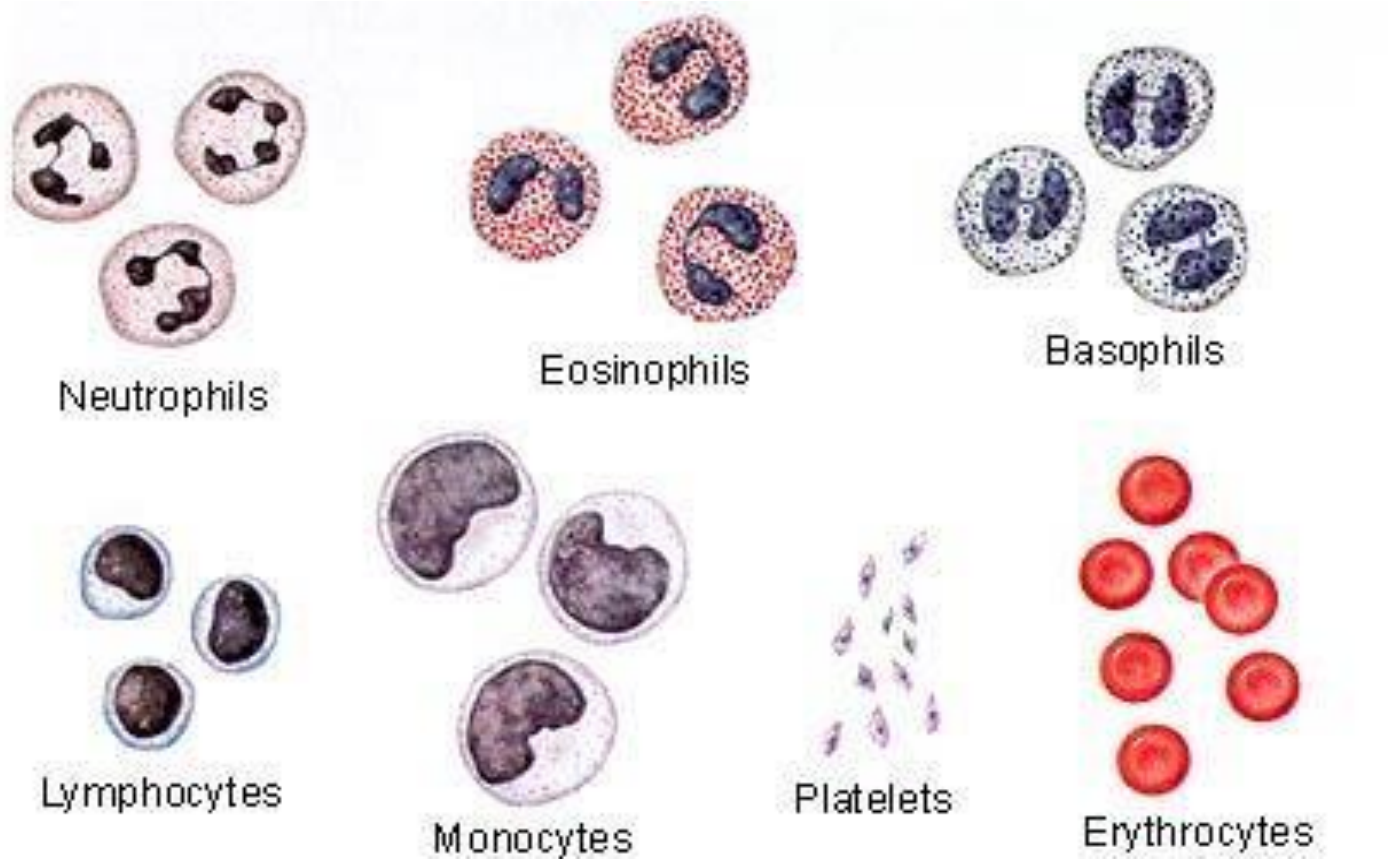
1-Relative differential leucocytic count:

$$\frac{\text{Numberx100}}{\text{Total leucocytic count}}$$

2-Absolute count:

$$\frac{\text{DLC x total= cells|mm3}}{100}$$

1.



Blood cells including white blood cells

	Granular leukocytes			A granular leukocytes	
	Neutrophils	**Eosinophils**	**Basophils**	**Lymphocytes**	**Monocytes**
Site of formation	**Formed in the bone marrow**			Formed in the lymphoid tissues.	**Formed in the bone marrow**
Cytoplasmic granules	**contain granules**			**contain no granules**	
% of total leukocytes	**60-70%**	1-5%	0.0-1.0%	**20-30%**	3-8%
Life span	**4 -5 days**			**months or even years**	
Functions	First line of defense against bacterial infection by phagocytosis	**1. Defense against parasite 2.decrease allergic reaction**	1. Synthesize and liberates heparin into blood 2. Histamine for al	**1. T lymphocytes for cell mediated immunity 2. B lymphocytes secrete antibodies**	Phagocytosis of bacteria and old cells such as RBCs

- Functions of leukocytes:

(I) Granular leukocytes

A) Neutrophils:

Constitute the first defensive line: against invading micro organisms.

Main function: phagocytosis and destruction of invading bacteria.

B) Esinophils:

- Weak phagocytosis.
- **Defense against parasitic infections e.g. schistosomiasis**.
- Decrease allergy.

C) Basophils:

- Liberation of heparin into blood (prevent blood coagulation).
- **Play a role in allergy.**

(II) Non-Granular leukocytes:

(A)Lymphocytes: T lymphocytes for cell mediated immunity **and B lymphocytes secrete antibodies**

(B) Monocytes:

They phagocytes and kill bacteria but more powerful than neutrophil

 4 million–6 million per mm^3 blood	7–8 µm in diameter; bright-red to dark-purple biconcave disks without nuclei.	
White Blood Cells (leukocytes) 5,000–11,000 per mm^3 blood	Fight infection. Remove dead/dying cells. Destroy cancer cells.	Red bone marrow
Granular leukocytes		
• Neutrophils  40–70%	Phagocytize pathogens. 10–14 µm in diameter; spherical cells with multilobed nuclei; fine, lilac granules in cytoplasm if stained.	
• Eosinophils  1–4%	Phagocytize antigen-antibody complexes and allergens. 10–14 µm in diameter; spherical cells with bilobed nuclei; coarse, deep-red, uniformly sized granules in cytoplasm if stained.	
• Basophils  0–1%	Release histamine and heparin, which promote blood flow to injured tissues. 10–12 µm in diameter; spherical cells with lobed nuclei; large, irregularly shaped, deep-blue granules in cytoplasm if stained.	
Agranular leukocytes		
• Lymphocytes  20–45%	Responsible for specific immunity. 5–17 µm in diameter (average 9–10 µm); spherical cells with large, round nuclei.	
• Monocytes  4–8%	Become macrophages that phagocytize pathogens and cellular debris. 10–24 µm in diameter; large, spherical cells with kidney-shaped, round, or lobed nuclei.	

Questions

1-Neutrophilia occurs in which of the following conditions?

a) Polycythemia

b) Leucopenia

c) Agranulocytosis

d) **Bacterial infection**

e) Anemia

2-Which of these cells increase in number in blood in allergy?

a) Red blood cell
b) Platelet
c) Basophil
d) Monocyte
e) Megaloblast

3-Which of these cells increase in number in blood in infectious mononucleosis?

a) Monocytes
b) Basophils
c) Platelets
d) Red blood cells
e) Erythroblast

4-Which stain is used in staining blood film in testing for differential leucocytic count?

A) Hematoxylin and eosin

B) **Romanowsky stain**

C) Gram stain

D) Negative Stain.

E) Congo Red Capsule Stain.