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Q.no2 :

1: Neutrophils : These are types of white blood cells.They make up 55 to 70% of our white blood cells. Their name is based on the staining qualities of granules.They have multilobed nucleus and have pink colour.They remain in blood for 7 to 10 hours in blood and then migrate into tissues. These are produced in bone marrow .

2: Basophills : Theses are also a type of white blood blood cells . They are also produced in bone marrow ,however they are found in many tissues in our body as well.They make up 3% of our white blood but play an important role in healing of any infection . Moreover they prevent blood from clotting by releasing histamine and play critical role in allergic situation .

3: Eosinophils : They are also a type of white blood cells and are produced in bone marrow. They have two important functions . They destroy invading germs like viruses, bacteria or parasite.They also have a role in inflammatory responses. They have bilobed nuclei and make up 1 to 4% of white blood.

4:Monocytes : These are another type of white blood cells .They are mononuclear and have bean like shape. They range from 2 to 8% of white blood. They are constantly generated in bone marrow because of their short span of life in blood. Once they reach tissues in our body, they are called macrophages. There they isolate and fight all the harmful microorganism.

5: Lymphocytes : They are the last type of white blood cells and make up 20 to 40% share of white blood. They are also generated in bone marrow. They have three types of cells.

B Cells : Lymphocytes that remain in bone marrow are called B cells. 25% of new lymphocytes stay in bone marrow.They recognize antigents and become plasma cells that protect antibodies to fight them.

T cells : 75% of new lymphocytes migrate to thymus and becomes T cells. T cell CD4+ recognizes Ag in context of MHCII,while cytotoxic CD8+ recognizes Ab in MHCI.

NK Cells : Natural killer (NK) cells are also part of the immune system.

Q.no 3 : Ans

Immunity : Resistance of organism to invading biotic or abiotic pathogens and their harmful effects is called immunity. It has two types .

- I) Active Immunity**
- II) Passive immunity**

Active Immunity :

Immunity that develops in response to an infection or vaccination is called active immunity .It has further two types that is natural and artificial active immunity.

Passive immunity :

It is developed after one receives antibodies from someone or somewhere else .Antibodies that are received from mother through breast milk act as a natural passive immunity.Antibodies that are received through medicine e.g from a gamma globulin injection, or infusion .

Native immunity : Native immunity also called Innate or Natural Immunity provides the early line of defense against microbes. It consists of cellular and biochemical defense mechanisms that are in place even before infection and are poised to respond rapidly to infection. It has the following components .

Physical and chemical barriers : Epithelia and antimicrobial chemicals produced at epithelial surfaces.

Phagocytic cells (neutrophils, macrophages), dendritic cells and natural killer cells

Blood proteins, other mediators of inflammation.

Adoptive immunity : also called specific or acquired immunity system recognizes and reacts to a large number of microbial and nonmicrobial substances.

The major qualities of adoptive immunity are the ability to distinguish different substances, called specificity and the ability to respond more vigorously to repeated exposures to the same microbe, known as memory. Components of adoptive immunity are cells called lymphocytes and their secreted products, such as antibodies. Foreign substances that induce specific immune responses or are recognized by lymphocytes or antibodies are called antigens.

Q.no 1 : Fill in the blanks

- i)** Ability of pathogen to enter host and stimulate an immune response is called **INFECTION**.
- ii)** **IMMUNITY** is resistance of a host to pathogens and their toxic effects .
- iii)** A failure of tolerance the immune system reacts to self is known as **AUTOIMMUNITY** .
- iv)** **CHEMOKINES** are molecules released by pathogen to attract cells to immune system.
- v)** **CYTOKINES** are signaling molecules released by one cell to cause by response in another.
- vi)** Primary lymphatic organs are **BONE MARROW** , and **THYMUS** .
- vii)** The site of B cells maturation in birds is called **BURSA OF FABRIUS** .
- viii)** The largest lymphoid organ in human is **SPLEEN**.
- ix)** Monocytes are known as **MACROPHAGES** when enter tissues and become fully mature.