

HUMAN ANATOMY AND PHYSIOLOGY 1(BP101T)

UNIT: 3 BODY FLUIDS AND BLOOD

CLASS: 7

TOPIC: RETICULO ENDOTHELIAL SYSTEM OR TISSUE MACROPHAGE SYSTEM

Reticuloendothelial system or macrophages system is the system of primitive phagocytic cells which play important role in defence mechanism of the body.

MACROPHAGE: macrophage is a large cell derived from monocyte. It has the property of phagocytosis, so the macrophage is also defined as large phagocytic cell.

CLASSIFICATION OF RETICULOENDOTHELIAL CELLS: These are classified as two types

- 1) Fixed Reticuloendothelial cells or tissue macrophages
- 2) Wandering Reticuloendothelial cells

Location:

1) **Fixed Reticuloendothelial cells are present in** • Connective tissue • Endothelium blood sinusoid • Reticulum of spleen lymph node and bone marrow • Meningocytes of meninges • Alveoli of lungs • Subcutaneous tissues

2) **Wandering Reticuloendothelial cells are present in** blood and migrate.

- Functions of Reticuloendothelial system or macrophages system

FUNCTION OF MACROPHAGES SYSTEM:

1). PHAGOCYTIC FUNCTION: Macrophages are the large phagocytic cells, which play an important role in defense of the body by phagocytosis. When any foreign body invades, macrophages ingest them by phagocytosis and liberate the antigenic products of the organism. The antigens activate the helper T- Lymphocytes and B Lymphocytes. The lysosomes, of macrophages contain proteolytic enzymes which digest bacteria.

2) SECRETION OF BACTERICIDAL AGENT: Some macrophages cells releases bactericidal substances such as a) Superoxide b) hydrogen peroxide

c) hydroxyl ions

3) SECRETION OF INTERLEUKINS:

Some macrophages cells interleukins which help in maturation

a) Interleukin-1: accelerates the production of B and T-lymphocytes

b) Interleukin-6: cause the growth of B-lymphocytes

c) Interleukin-12: accelerates the production of T-lymphocytes

4) SECRETION OF TUMOR NECROSIS FACTOR: Two types of tumor necrosis factors (TNF) are secreted by tissue macrophages:

1) TNF- α : Causes necrosis of tumor and activates the immune responses in the body

2) TNF- β : stimulates immune system and vascular response in addition to causing necrosis of tumor.

5) SECRETION OF TRANSFORMING GROWTH FACTOR: Tissue macrophages secrete transforming growth factor which play important role in preventing rejection of transplanted tissues or organs by immune suppression.

6) SECRETION OF COLONY STIMULATION FACTOR: The colony stimulation factor secreted by tissue macrophages is M-CSF. It accelerates growth of granulocytes, monocyte and macrophages.

7) SECRETION OF PLATELET DERIVED GROWTH FACTOR: Tissue macrophages secrete the platelet derived growth factor (PDGF), which accelerates repair of damaged blood vessel and wound healing.

8) REMOVAL OF CARBON PARTICLES AND SILICON: The tissue macrophages ingest the substances like carbon particles and silicon which enters the body.

9) DESTRUCTION OF SENILE RBC: tissue macrophages cells, particularly those in spleen destroy the senile RBCs and release haemoglobin.

10) HEMOPOIETIC FUNCTION: the tissue macrophages cells also play an important role in the production of blood cells.