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Editorial

Phagocytosis and its significance

Im Ut*

Department of Immunology, University of de Moncton, New Brunswick, Canada

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EDITORIAL NOTE

Phagocytosis is one of the main mechanisms of the immune system. It is one of the first processes that responds to infection, and is one of the first branches of the adaptive immune system. Although many cells have the potential to cause phagocytosis, other types of cells do so as part of their primary function.

Significance

Neutrophils, macrophages, monocytes, dendritic cells, osteoclasts and eosinophils can be classified as expert phagocytes. The first three play a key role in the immune system's response to many diseases. The role of neutrophils in blood circulation and rapid migration to muscle in large quantities only in the event of infection. There, they have a direct microbicidal effect on phagocytosis. After ingestion, neutrophils are effective in killing intracellular bacteria. Neutrophils phagocytose are mainly Fcγ receptors and related receptors 1 and 3. The microbicidal effect of neutrophils is due to the large number of molecules present in the pre-formed granules. Enzymes and other molecules prepared by these protease granules, such as collagenase, gelatinase or serine proteases, myeloperoxidase, lactoferrin and antibacterial proteins. The degradation of this phagosome, which is associated with the production of active oxygen oxidative burst rather than microbicidal.

***Corresponding author.** Im ut, E-mail: im.ut@c.ca

Monocytes, with macrophages maturing, leave the bloodstream to migrate through the tissues. Where there are cells they live and form a barrier to relaxation. Macrophages initiate phagocytosis through mannose receptors, scavenger receptors, Fcγ receptors and associated receptors and macrophages are long-lived and may continue phagocytosis by forming new lysosomes. Dendritic cells also remain in the tissues and swallow bacteria through phagocytosis. Their role is not to kill or remove germs, but rather to break them down to present antigen to the immune system cells adapt to the conditions.

Phagocytosis and its variants

The main types of phagocytes are monocytes, macrophages, neutrophils, tissue dendritic cells, and mast cells. Some cells, such as epithelial cells and fibroblasts, may also be involved in phagocytosis, but do not have receptors to detect opsonized viruses and are not immune cells.

Monocyte cells: Monocytes are a type of leukocyte, or white blood cell. They are the largest type of leukocyte and can divide into macrophages and normal dendritic cells. As part of the vertebrate innate antibody monocyte also influences the flexible immunization process. Macrophages cells: macrophage, a type of white blood cell that helps eliminates foreign matter by inserting foreign substances and initiating the immune response. Macrophages are part of the reticuloendothelial system or mononuclear phagocyte system and occur in almost all body tissues.

Neutrophils cells: Neutrophils are the most common type of granulocyte and make up 40 % to 70 % of all white blood cells in humans. They make up an important part of the innate immune system, and their functions vary from animal to animal.

Tissue dendritic cells: Dendritic cells are present in those tissues linked to the external environment, such as the skin where there is a special type of dendritic cell called the langerhans cell and the inner lining of the nose, lungs, stomach and intestines. They can also be found in the case of immaturity.

Mast cell: The mast cell also known as the mastocyte or labrocyte is a living cell of connective tissue that contains many granules rich in histamine and heparin. Specifically, it is a type of granulocyte found in the myeloid stem cell that is part of the immune system and neuroimmune systems. These are the main forms of phagocytosis.