Difference Between Autolysis and Apoptosis

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Key Difference – Autolysis vs Apoptosis

Multicellular organisms are made from more than one cell. When multicellular organisms grow and develop, the cell number and cell divisions should be tightly regulated to maintain its biological and physical structure. The rate of cell division and rate of cell death are controlled perfectly in multicellular organisms. If a cell is no longer required, it self-destructs by activating intracellular death mechanisms. Apoptosis and autolysis are two such mechanisms. **Autolysis is a process of destructing an organism's cells by enzymes produced by the organism itself**. **Apoptosis is a process of programmed cell death which occurs via an ordered sequence of events during growth and development of the organism.** This is the key difference between autolysis and apoptosis.

What is Autolysis?

Autolysis is a process where cells self-destruct using digestive enzymes. It usually occurs in injured tissues or dying cells. Autolysis is driven by the digestive enzymes secreted from the lysosomes. During autolysis, the internal membrane of the cell breaks down and the cell dies. Autolysis is not a highly regulated process as apoptosis. It generally occurs as a result of an injury or infection. It does not occur in healthy tissues. Upon an injury or infection, digestive enzymes are released from the cell, leading to its self-destruction. These digestive enzymes can be harmful to surrounding cells and interfere with their functions. Hence, autolysis can be considered as messy and disordered process compared to programmed cell death or apoptosis.

What is Apoptosis?

Apoptosis is a form of programmed cell death in multicellular organisms. It involves a series of biochemical processes that lead to characteristics morphological changes in the cell and ultimate death of the cell. Apoptosis occurs as a normal and controlled part of an organism's growth or development. It does not produce harmful substances to the cell surrounding which can harm other cells. Apoptosis plays a key role in developing and maintaining the body of a healthy person. It eliminates old, unnecessary and unhealthy cells from the body. If

apoptosis doesn’t work well, the cells which are supposed to eliminate or die will become immortal and accumulate in the body. Hence, apoptosis functions all the time in the body as a part of the normal activity of healthy tissues.

Apoptosis is a highly controlled process which occurs in three main levels: receiving of death signals, activation of regulatory genes and performing effector mechanisms. Main effector mechanisms are cell shrinkage, cytoskeletal reorganization, cell surface alterations, endonuclease activation and DNA cleavage.

Many diseases arise due to altered cell survival and death. Increased apoptosis and decreased apoptosis lead to many diseases such as AIDS, Alzheimer’s disease, Parkinson’s disease, amyotrophic lateral sclerosis, lupus erythematosus, and some viral infections.

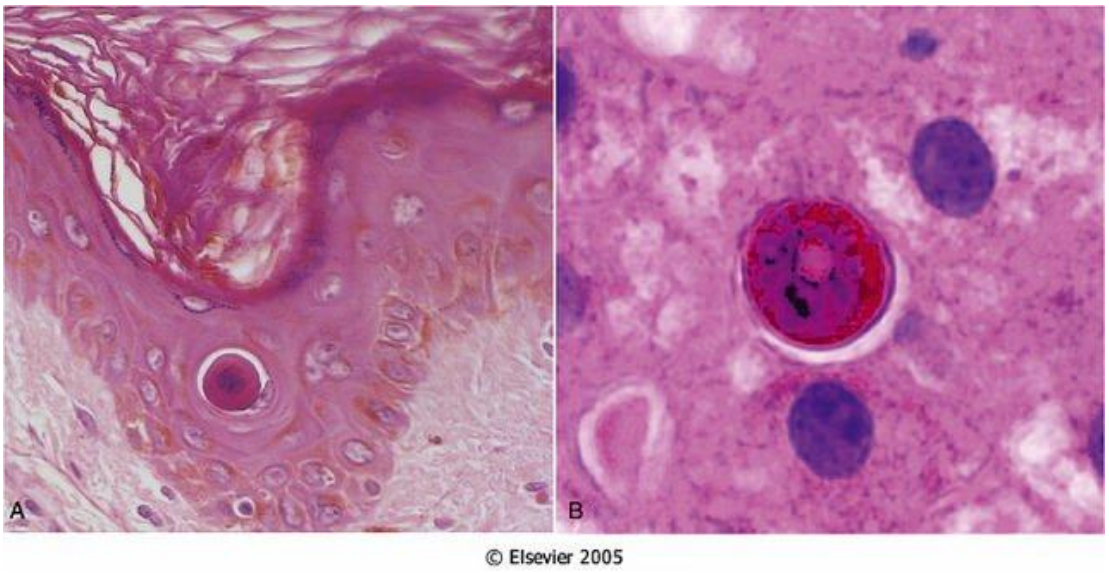

Figure 02: Apoptosis

What are the similarities between Autolysis and Apoptosis?

- Apoptosis and autolysis are two mechanisms that cause cell death.
- Both processes are important for multicellular organisms.

What is the difference between Autolysis and Apoptosis?

Current Price vs Constant Price	
Autolysis is the destruction of an organism's cells by enzymes produced by the cells themselves.	Apoptosis is a form of programmed cell death in which cells undergo an ordered sequence of events which lead to its death.
Intentionality	
Autolysis is unintentional.	Apoptosis is intentional.
Occurrence	
Autolysis does not happen in healthy tissues.	Apoptosis occurs in healthy tissues all the time.
Regulation	
Autolysis is not a controlled process.	Apoptosis is a controlled process.
Effect	
Autolysis results in harmful effects on surrounding cells or tissues.	Apoptosis does not produce harmful substances which interfere surrounding cells or tissues.

Summary – Autolysis vs Apoptosis

Autolysis and apoptosis are two processes which lead to cell death. Autolysis refers to the process that destructs a cell by its own digestive enzymes. In other words, autolysis can be defined as self-destruction or self-digestion. Apoptosis is the process of programmed cell death which occurs in healthy tissues as a part of normal growth and development. It occurs via a highly regulated series of events. Autolysis is not a controlled or preferred process since it affects surrounding cells.

Apoptosis does not produce any substance which damage surrounding cells. This is the difference between autolysis and apoptosis.

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