AUTOPHAGY: CELLULAR DEGRADATION

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Introduction. Autophagy is an intracellular degradation system that delivers cytoplasmic constituents to the lysosome. Despite its simplicity, recent progress has demonstrated that autophagy plays a wide variety of physiological and pathophysiological roles, which are sometimes complex. Autophagy consists of several sequential steps sequestration, transport to lysosomes, degradation, and utilization of degradation products and each step may exert different function.

Aim. Carry out an analytical review of the role of Autophagy in normal and disease states

Materials and methods. Data analysis of literature and Internet sources.

Results and discussion. Autophagy is a self-digesting mechanism responsible for removal of damaged organelles, malformed proteins during biosynthesis, and nonfunctional long-lived proteins by lysosome. Autophagy is a self-degradative process that is important for balancing sources of energy at critical times in development and in response to nutrient stress. Autophagy also plays a housekeeping role in removing misfolded or aggregated proteins, clearing damaged organelles, such as mitochondria, endoplasmic reticulum and peroxisomes, as well as eliminating intracellular pathogens. Thus, autophagy is generally thought of as a survival mechanism, although its deregulation has been linked to non-apoptotic cell death. Autophagy can be either non-selective or selective in the removal of specific organelles, ribosomes and protein aggregates, although the mechanisms regulating aspects of selective autophagy are not fully worked out. In addition to elimination of intracellular aggregates and damaged organelles, autophagy promotes cellular senescence and cell surface antigen presentation, protects against genome instability and prevents necrosis, giving it a key role in preventing diseases such as cancer, neurodegeneration, cardiomyopathy, diabetes, liver disease, autoimmune diseases and infections.

Conclusion. Thus, autophagy has emerged as a new and potent modulator of disease progression that is both scientifically intriguing and clinically relevant. The study may be helpful in drug discovery and its application to alleviate the autophagy-related disorders.