عنوان مقاله:

Apoptosis: from Signalling Pathways to Therapeutic Tools

محل انتشار:

مجله علوم پایه پزشکی ایران, دوره 11, شماره 3 (سال: 1387)

تعداد صفحات اصل مقاله: 22

نویسندگان:

Seyed Hadi Mousavi - *Department of Pharmacology and Pharmacological Research Centre of Medicinal Plants, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*

Zahra Tayarani-Najaran - *Department of Pharmacology and Pharmacological Research Centre of Medicinal Plants, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*

Peter Hersey - *Immunology and Oncology Unit, Newcastle Mater Hospital, Newcastle, New South Wales, Australia*

خلاصه مقاله:

Apoptosis or programmed cell death is a gene regulated phenomenon which is important in both physiological and pathological conditions. It is characterized by distinct morphological features including chromatin condensation, cell and nuclear shrinkage, membrane blebbing and oligonucleosomal DNA fragmentation. Although, two major apoptotic pathways including ۱) the death receptor (extrinsic) and ۲) mitochondrial (intrinsic) pathway have been identified, recently endoplasmic reticulum and lysosomal pathways have been also recognized. Depending on both the cell type and the initiating factor, distinct pathways are activated. The pathways share a common final phase of apoptosis, consisting of activation of the executioner caspases and dismantling of substrates critical for cell survival. The important regulatory mechanisms include death receptors, caspases, mitochondria and Bcl-۲ family proteins. Modulating of apoptosis is a novel therapeutic strategy in treatment of different diseases. These include situations with unwanted cell accumulation (cancer) and failure to diminish aberrant cells (autoimmune diseases) or diseases with an inappropriate cell loss (heart failure, stroke, AIDS and neurodegenerative diseases). Modulation of apoptosis is a novel therapeutic strategy in treatment of different diseases. Many approaches including gene therapy, antisense strategies and numerous apoptotic drugs to target specific apoptotic regulators, are currently being developed. The goal of this review is to provide a general overview of current knowledge on the process of apoptosis including morphology, biochemistry, signaling as well as a discussion of apoptosis in diseases and effective therapy.

کلمات کلیدی:

Apoptosis, Autoimmunity, Cancer, Intrinsic/Extrinsic pathway, Neurodegenerative diseases