CASPASE AND PROGRAMMED CELL DEATH

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ABSTRACT:

Programmed cell death or apoptosis is a well regulated physiological form of cellular autodestruction. It plays an essential role in embryonic development, homeostasis, remodeling, surveillance, and host defence mechanisms. Conversely dysregulation of apoptosis, resulting in either too less or excessive cell death is implicated in pathogenesis of stroke, myocardial infarction, neurodegenerative diseases, cancer and autoimmmune disorders. Apoptosis is coordinated by a family of cysteine proteinases called caspases, which dismantle the cell by targeting panoply of proteins. Caspases belong to a family of highly conserved aspartate-specific cysteine proteases and are members of the interleukin-1β-converting enzyme family, present in multicellular organisms. The caspase gene family consists of 15 mammalian members that are grouped into two major sub-families, namely inflammatory caspases and apoptotic caspases. The apoptotic caspases are further subdivided into two sub-groups, initiator caspases and executioner caspases. The caspases form a caspase-cascade system that plays the central role in the induction, transduction and amplification of intracellular apoptotic signals for cell fate determination, regulation of immunity, and cellular proliferation and differentiation.

KEYWORDS: Caspase, Programmed cell death, initiator caspases, executioner caspases.

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