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Senescence as a General Cellular Response to Stress: A Mini-Review

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HIGHTLIGHTS

- Senescence is a common cell reaction on stress
- Replicative and induced senescence are mediated by close mechanisms
- Stress-induced senescence is cell type specific

Abstract

Cellular senescence was initially described as the phenomenon of limited cell divisions that normal cells in culture can undergo during long-term-cultivation. Later it was found that senescence may be induced by various stress factors. The intriguing resemblance between stress-induced and replicative senescence makes questionable the distinction between both types and suggests that the cellular senescence is a common outcome of stress response. Growing evidences support the idea that stress-induced senescence is the cell-type specific.

Keywords

Stress response, senescence, apoptosis, stem cells

1. Introduction

All living organisms experience a wide range of stressors. Cells subjected to different stress factors can be damaged. This damage for cultured cells may be reversible (repair) or irreversible (apoptosis, senescence). Cells undergoing apoptosis die and rapidly disintegrate. Senescent cells, which are defined as irreversibly arrested cells, remain viable, maintain high metabolic activities, and secrete a large number of different substances into the environment. Over the past decade,