

综述

活性氧类物质在化学物诱导的细胞凋亡中的调节作用

傅文字¹, 徐立红^{1*}, 张甬元², 林群声²

(1. 浙江大学劳动卫生与环境卫生所, 浙江 杭州 310031; 2. 香港城市大学生物及化学系, 香港)

收稿日期 2001-11-5 修回日期 网络版发布日期 2009-1-23 接受日期 2002-3-20

摘要 细胞凋亡是在生理或病理条件下, 为维持内环境的稳定的一种程序性细胞死亡。诱导细胞凋亡的因素可分为物理性、化学性和生物性因素。很多实验数据表明氧化应激在细胞凋亡的发生过程中具有重要作用。各种活性氧类物质如超氧阴离子、过氧化氢、羟自由基和一氧化氮均与细胞凋亡的发生有关。但是活性氧类物质诱导凋亡发生的机理尚未阐明。本综述在对细胞凋亡和氧化应激描述的基础上着重讨论活性氧类物质诱导细胞凋亡发生的可能机理。在以后的研究中, 将着重于探讨化学物质通过产生活性氧类物质而影响细胞凋亡的机理及建立相关的生物标志物。

关键词 [凋亡](#) [氧化应激](#) [活性氧类物质](#) [化学物质](#)

分类号 [R992](#)

Regulatory effect of reactive oxygen species on apoptosis induced by chemicals

FU Wen-Yu¹, XU Li-Hong^{1*}, ZHANG Yong-Yuan², Paul K S LAM²

(1. Institute of Occupational and Environmental Health, Zhejiang University, Hangzhou 310031, China; 2. Department of Biology and Chemistry, City University of Hong Kong, Hong Kong, China)

Abstract

Apoptosis is a genetically programmed active cell death process for maintaining homeostasis under phy-siological conditions and for responding to various stimuli. Apoptosis can be induced by a wide variety of physical, chemical and biological stimuli. There is compelling evidence for the central role of oxidative stress in the apoptotic process. Various reactive oxygen species (ROS) and nitrogen species such as superoxide anion, hydrogen peroxide, hydroxyl radical and nitric oxide are involved in apoptosis. But the mechanism through which ROS plays an important role in inducing apoptosis is not fully understood. This review will address some of the current paradigms for oxidative stress and apoptosis, and discuss the possible mechanism by which oxidants can modulate the apoptotic pathway. In the future research, the research will emphasized on the mechanisms of apoptosis induced by chemicals and the regulatory effect of ROS involved in this process, moreover, the finding will provide new insights into the related biomarkers.

Key words [apoptosis](#) [oxidative stress](#) [reactive oxygen species](#) [chemicals](#)

DOI:

通讯作者 徐立红 xulihong@zjuem.zju.edu.cn

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(197KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“凋亡”的 相关文章](#)
- ▶ 本文作者相关文章

- [傅文字](#)
- [徐立红](#)
- [张甬元](#)
- [林群声](#)