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论著

槲皮素对多柔比星致乳大鼠心肌细胞抗氧化酶活性及Fas/FasL表达变化的影响

裴天仙[1]，郭传敏[1]，于 靖[2]，杨 东[1]，郭景玥[1]

（1. 天津药物研究院, 天津 300193; 2. 天津市胸科医院, 天津 300193）

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摘要 目的 探讨槲皮素对多柔比星致乳大鼠心肌细胞损伤的保护作用及机制。方法 原代培养乳大鼠心肌细胞，随机分为正常对照组、多柔比星1.72 μmol·L^{-1}损伤组和多柔比星+槲皮素25，50及100 μmol·L^{-1}组。槲皮素与心肌细胞培养3 h 后，加入多柔比星继续培养24 h，正常对照组仅加等量DMEM培养液。倒置显微镜下观察细胞生长状态，比色法检测培养液中谷胱甘肽过氧化物酶（GSH-Px）和超氧化物歧化酶（SOD）的活性，用RT-PCR和Western印迹法检测Fas和FasL的mRNA和蛋白的表达。结果 与正常对照组相比，多柔比星损伤组心肌细胞生长状态差，GSH-Px和SOD的活性降低，Fas和FasL的mRNA和蛋白的表达均升高。槲皮素25，50及100 μmol·L^{-1}均可拮抗多柔比星所致的上述变化：GSH-Px分别为(76±3)，(73±4)，(71± 3) *vs* (69±3)kU·L^{-1}；SOD活性分别为(31±2)，(29±2)，(29±2) *vs* （26±2）kU·L^{-1}；Fas mRNA：0.61±0.11，1.04±0.12，1.29±0.11 *vs* 1.61±0.16；FasL mRNA：0.81±0.07，1.24±0.10，1.57±0.09 *vs* 1.79±0.11；Fas蛋白：1.08±0.12，1.54±0.10，1.89±0.11 *vs* 2.15±0.15；FasL蛋白：1.51±0.08，1.70±0.12，2.20±0.09 *vs* 2.41±0.26。结论 槲皮素可减轻多柔比星致乳大鼠心肌细胞凋亡，Fas和FasL蛋白表达的减少是其可能机制之一。

关键词 槲皮素 多柔比星 心肌细胞 基因表达 蛋白表达 Fas/FasL

分类号 R963，R979.1

Effects of quercetin on antioxidase activity and Fas/FasL expression in neonate rat cardiomyocytes injured by doxorubicin

PEI Tian-xian[1], GUO Chuan-min[1], YU Jing[2], YANG Dong[1], GUO Jing-yue[1]

(1. Tianjin Institute of Pharmaceutical Research, Tianjin 300193, China; 2. Tianjin Chesthospital, Tianjin 300193, China)

Abstract

OBJECTIVE To study the protective effect and mechanism of quercetin(Que) on doxorubicin(Dox)-induced damage to cardiomyocytes in neonate rats in terms of Fas/FasL and oxidative stress. **METHODS** Cultured neonatal rat cardiomyocytes were randomly divided into 5 groups: normal control group, Dox 1.72 μmol·L^{-1} group, Dox+Que 25, 50 and 100 μmol·L^{-1} groups. The cells in Dox+Que groups were pretreated with Que for 3 h and then co-incubated with Dox for 24 h. To observe the cell growth condition by inverted microscope, the activity of glutathion peroxidase (GSH-Px) and superoxide dismutase (SOD) was detected by chromatometry; the mRNA and protein expression of Fas and FasL was detected by RT-PCR and Western blotting, respectively. **RESULTS** Compared with normal control group, the activity of GSH-Px and SOD in Dox group decreased; and the mRNA and protein expression of Fas and FasL was up-regulated. Que 25，50 and 100 μmol·L^{-1} could act as an antagonist of changes induced by Dox：GSH-Px, (76±3)，(73±4)，(71±3) *vs* (69±3) kU·L^{-1}；SOD, (31±2)，(29±2)，(29±2) *vs*（26±2）kU·L^{-1}；Fas mRNA：0.61±0.11, 1.04±0.12, 1.29±0.11 *vs* 1.61±0.16; FasL mRNA：0.81±0.07, 1.24±0.10, 1.57±0.09 *vs* 1.79±0.11; Fas protein：1.08±0.12, 1.54±0.10, 1.89±0.11 *vs* 2.15±0.15; FasL protein：1.51±0.08, 1.70±0.12, 2.20±0.09 *vs* 2.41±0.26. **CONCLUSION** Que may significantly inhibit the apoptosis induced by Dox in the cultured myocardial cells. The potential mechanism is that Que can down-regulate Fas and FasL protein expression.

Key words quercetin doxorubicin cardiomyocyte gene expression protein expression Fas/FasL

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通讯作者 裴天仙 yp616727@sina.com