

### 三羟异黄酮对人乳腺癌MCF-7/ADM细胞体外抑瘤效应、细胞周期及凋亡的影响

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### Genistein Plays Antitumor Role through Cell Cycle and Apoptosis Pathways in Human Breast Cancer Cell Line MCF-7/ADM in vitro

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全文: PDF (1122 KB) HTML (0 KB) 输出: BibTeX | EndNote (RIS) 背景资料

**摘要** 目的探讨三羟异黄酮(Genistein GEN)对体外培养人乳腺癌耐药细胞MCF-7/ADM抑瘤作用、细胞周期及细胞凋亡的影响。方法采用MTT法检测GEN单独及联合阿霉素对体外培养人乳腺癌MCF-7/ADM细胞的抑制作用;荧光分光光度法检测GEN对阿霉素在MCF-7/ADM细胞的蓄积作用;用流式细胞仪(FCM)检测细胞周期及凋亡率的变化。结果GEN单独及联合阿霉素对体外培养MCF-7/ADM细胞均有明显生长抑制作用,GEN单独作用48 h后表现为随时间的延长抑制作用明显增强,当GEN浓度达到60 μg/ml时,其抑制作用急剧上升( $P<0.01$ )。联合阿霉素后与对照组相比抑制率明显上升( $P<0.01$ ),并随GEN浓度的加大其抑制作用增强,细胞内阿霉素的浓度也随之升高。与对照组相比,细胞周期均有G<sub>2</sub>/M期阻滞作用,细胞凋亡百分比以联合组最高( $P<0.01$ ),G<sub>1</sub>期前出现典型的亚二倍体凋亡峰。结论GEN单独及联合阿霉素对体外培养人乳腺癌MCF-7/ADM细胞具有抑瘤增效作用,可以提高阿霉素在MCF-7/ADM细胞内的蓄积、对细胞周期具有G<sub>2</sub>/M期阻滞作用,显著诱导MCF-7/ADM细胞凋亡,可能是其发挥逆转多药耐药分子生物学机制之一。

**关键词:** 三羟异黄酮 MCF-7/ADM 多药耐药 细胞周期 细胞凋亡

**Abstract:** Objective To study the antitumor effect of genistein (Genistein GEN) in cultured drug-resistant breast cancer cell line of MCF-7/ADM in vitro, and influences of genistein to cell cycle and apoptosis. Methods Inhibitory effect of GEN alone or combined with doxorubicin on the cultured MCF-7/ADM was detected by MTT assay; the accumulative effect of GEN on doxorubicin in MCF-7/ADM was detected by fluorescence spectrophotometry; and cell cycle and apoptosis rate was detected by flow cytometry (FCM). Results Significant inhibitory effect on cultured MCF-7/ADM in vitro was not observed under GEN alone or combined with Doxorubicin 48 h later GEN treated alone, the inhibition increased gradually in time-dependent model. When the concentration of GEN reached 60 μg/ml, inhibition effect was markedly increased ( $P<0.01$ ). When Doxorubicin was added, the inhibition rate was significant increased compared with the control group ( $P<0.01$ ), and the inhibition strengthened with the increasing concentration of GEN, concentration of intracellular doxorubicin was also increased. Compared with the control group, the cell cycle were both blocked at G<sub>2</sub>/M phase, apoptosis was found to be the highest percentage in the combination group ( $P<0.01$ ), typical hypodiploid apoptotic peak was detected before the G<sub>1</sub> phase. Conclusion GEN alone and combined with Doxorubicin had an inhibitory and additive effect on cultured human breast cancer cell line MCF-7/ADM in vitro, it could increase the intracellular accumulation of Doxorubicin and arrest cell cycle at phase G<sub>2</sub>/M, as well as in inducing significant apoptosis of MCF-7/ADM cells, which may be one of its molecular mechanisms of the reversal of multidrug resistance.

**Key words:** Genistein (GEN) MCF-7/ADM MDR Cell cycle Cell apoptosis

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