

## 论文

### ACTD对V79旁观者细胞光学和超微结构影响

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摘要:

**目的** 观察放线菌素D(ACTD)对靶细胞和旁观者细胞的光学和超微结构影响,探讨ACTD能否诱导旁观者效应(BE)。方法用不同剂量ACTD(0、0.25、0.5、1.0、2.0、4.0、8.0 mg/L)处理V79靶细胞1 h,在4 mg/LACTD作用4、8、12和24 h取靶细胞去细胞培养液(CM),培养正常细胞24 h后,观察BE;形态学观察用倒置光学显微镜,超微结构用透射电子显微镜观察,存活率用克隆形成实验检测。结果 随着ACTD剂量增加,靶细胞数量逐渐减少,而变形细胞数量增多;CM处理旁观者细胞数目减少,脱壁增加;超微结构观察CM处理旁观者细胞出现凋亡征象,光学及超微结构改变均以4 h CM组效应最重,随CM时段延后减轻;细胞存活率在4、8、12、24 h CM组分别为(59.5±3.4)%、(69.2±4.5)%、(88.8±5.2)%和(61.3±6.8)%,均低于对照组,高于4 mg/L ACTD组(50.0±6.5)%( $P<0.05$ )。结论 ACTD可以诱导旁观者细胞凋亡,以4 h CM效应最强。

**关键词:** 放线菌素D 条件培养液 旁观者效应 超微结构

### Effect of actinomycin D on apoptosis in V79 target and bystander cells

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Abstract:

**Objective** To observe the effect of actinomycin D(ACTD)and conditioned medium obtained from ACTD-exposed V79 cells on cell morphology and ultrastructure to determine whether ACTD could induce bystander effect in V79 cells. **Methods** V79 cells were administrated with ACTD for 1 hr at different dose (0,0.25,0.5,1.0,2.0,4.0,and 8.0 mg/L).Different period conditioned medium(CM)was collected at 4,8,12,and 24 hr after ACTD treatment to culture bystander cells for 24 hr to observe the bystander effect.Cell morphology and ultrastructural changes were observed under phase contrast optical microscope and transmission electron microscopy,respectively. **Results** The numbers of V79 cells reduced and those of abnormal cells increased in ACTD-treated groups in a dose-dependent manner ( $P<0.05$ ).Bystander cells were much less and the cells turned round and many cells got rid of wall.The bystander cells damage alleviated with the time but aggravated in 24 hr CM-treated bystander cells.Under transmission electron microscopy,the cells were in normal shape with normal organelles and nuclear.In 4 mg/L ACTD-exposed cells,shrinked and apoptotic bodies formed. Amongst the bystander cells treated with 4 hr CM,apoptosis phenomenon was the most obvious and apoptosis reduced with the time till a rebound in 24 hr CM.Death type of the bystander cells was mainly apoptotic.Survival rates of the bystander cells in 4,8,12,and 24 hr CM groups were 59.5±3.4%,69.2±4.5%,88.8±5.2%,and 61.3±6.8%,respectively, which all were lower than that of the control group(100.0±0.1%)and higher than that of 4 mg/L ACTD group(50.0± 6.5%). **Conclusion** ACTD could induce apoptosis of bystander V79 cells.The 4 hr CM treatment induces the strongest bystander effect.

**Keywords:** actinomycin D conditioned medium bystander effect ultrastructure

收稿日期 2011-09-19 修回日期 网络版发布日期

DOI: 10.11847/zgggws-2012-28-02-34

基金项目:

国家自然科学基金(30471475)

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[1] Hall EJ,Hei TK.Genomic instability and bystander effects induced by high-LET radiation

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[J].Oncogene,2003,22: 7034-7042.

[2] Maguire P,Mothersill C,Seymour C,et al.Medium from irradiated cells induces dose-dependent mitochondrial changes and BCL2 responses in unirradiated human keratinocytes[J].Radiat Res,2005,163: 384-390.

[3] Zhou H,Suzuki M,Geard CR,et al.Effects of irradiated medium with or without cells on bystander cell response[J].Mutat Res,2002,499: 135-141.

[4] Xiao Y,de Feyter E,Van Oven CH,et al.Induction and detection of bystander effects after combined treatment of cells with 5-brome-2'-deoxyurine,Hoechst33258 and ultraviolet A light[J].Int J Radiat Biol,2004,80: 105-114.

[5] 蔡原,肖云.联合处理V79细胞对旁观者效应的诱导及识别[J].中国公共卫生,2004,20(10): 1215-1216.

[6] Asur RS,Thomas RA,Tucker JD.Chemical induction of the bystander effect in normal human lymphoblastoid cells[J].Mutat Res,2009,676(1-2): 11-16.

[7] Asur R,Balasubramaniam M,Marples B,et al.Bystander effects induced by chemicals and ionizing radiation: evaluation of changes in gene expression of downstream MAPK targets[J].Mutagenesis, 2010,25(3): 271-279.

[8] Yang H,Asaad N,Held KD.Medium-mediated intercellular communication is involved in bystander responses of X-ray-irradiated normal human fibroblasts[J].Oncogene,2005,24: 2096-2103.

[9] Olsson A,Diaz T,Aguilar-Santelises M,et al.Sensitization to TRAIL-induced apoptosis and modulation of FLICE-inhibitory protein in B chronic lymphocytic leukemia by actinomycin D[J].Leukemia,2001,15 (12): 1868-1877.

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2. 史长华,路国兵,李玉红,许倩,张卓.电磁辐射对大鼠海马超微结构及凋亡因子影响[J].中国公共卫生,2011,27(11): 1446-1448
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