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论著

长春瑞滨诱导人肺癌Calu-3细胞凋亡及机制

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摘要 目的 观察长春瑞滨（VRB）诱导人肺癌Calu-3细胞凋亡时Bcl-2和半胱天冬酶-3的表达有无变化。方法 以不同浓度的VRB（20，40和60 μmol·L^{-1}）作用于体外培养的人肺癌Calu-3细胞24 h后，TUNEL法和吖啶橙染色法观察肺癌细胞凋亡形态学特征；流式细胞仪检测肺癌细胞凋亡率和肺癌细胞Bcl-2蛋白表达水平；以半胱天冬酶-3荧光分析检测试剂盒测定肺癌细胞半胱天冬酶-3活性。结果 VRB（20，40和60 μmol·L^{-1}）处理细胞24 h，TUNEL法及吖啶橙染色均观察到典型的凋亡细胞形态学特征。流式细胞仪检测VRB处理的肺癌细胞凋亡率分别为（3.1±0.6）%，（7.8±1.2）%和（19.6±4.3）%，较对照组（凋亡率为0）显著增高且呈剂量依赖性（P<0.01）；Bcl-2蛋白阳性表达细胞率分别为（37.6±6.9）%，（25.4±6.2）%和（8.4±2.5）%，较对照组（48.3±7.1）%显著降低且呈剂量依赖性（P<0.05）；肺癌细胞半胱天冬酶-3活性分别为（332±16），（417±11）和（631±27）μmol·L^{-1}·h^{-1}，较对照组（195±12）μmol·L^{-1}·h^{-1}显著增高且呈剂量依赖性（P<0.01）。结论 VRB可以诱导肺癌细胞凋亡，抑制Bcl-2表达及增强半胱天冬酶-3活性。

关键词 长春瑞滨 肿瘤细胞, 培养的 凋亡 蛋白, Bcl-2 半胱天冬酶-3 癌, 肺细胞, Calu-3

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Vinorelbine-induced apoptosis of cultured human lung cancer cells and mechanisms

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Abstract

AIM To study if there were any changes of Bcl-2 expression and caspase- 3 activity in vinorelbine(VRB)-induced apoptosis of human lung cancer cell line Calu-3. **METHODS** Cells were incubated with VRB(20, 40 and 60 μmol·L^{-1}) for 24 h. Morphological changes in apoptotic cells were studied by TUNEL- FITC staining and acridine orange(AO) staining. Flow cytometer was used to detect apoptotic rates and Bcl- 2 expression. Caspase-
3 activity was detected by spectrofluorometer. **RESULTS** After treatment with VRB (20, 40 and 60 μmol·L^{-1}) for 24 h, typical morphological features of apoptotic cells were appeared. Apoptotic rates of different concentrat ions of VRB treated cells were (3.1± 0.6) %，(7.8±1.2)% and (19.6±4.3)%, respectively, significantly higher than that of control cells(0%, P<0.01).
Bcl-2 expression rates of VRB treated cells were (37.6±6.9)%, (25.4±6.2)% and (8.4±2.5)%, respectively, much lower than that of control ones（48.3±7.1）% (P<0.05, P<0.01). Caspase- 3 activity of VRB treated cells were (332±16), (416±11) and (631±27)μmol·L^{-1}·h^{-1}, respectively, significantly higher than that of control ones （195±12）μmol·L^{-1}·h^{-1}(P<0.01). All changes were in a concentration- dependent manner. **CONCLUSION** VRB can induce apoptosis of human lung cancer cells Calu-3
effectively through inhibiting Bcl-2 protein and activation of caspase-3 activity.

Key words vinorelbine tumor cells cultured apoptosis protein Bcl-2 caspase-3 carcinoma lung cell Calu-3

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