

论著

## NF- $\kappa$ B抑制剂PDTC抗白血病细胞增殖的实验研究

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**摘要** 目的: 观察核转录因子NF- $\kappa$ B活性特异性抑制剂PDTC(吡咯烷二硫代氨基甲酸盐)对急性白血病细胞系K562细胞增殖的影响, 并探讨其机制。方法: 利用Trans AMTM NF- $\kappa$ B/p65活性测定试剂盒, 检测PDTC作用K562细胞12 h、24 h后NF- $\kappa$ B亚基p65活性的变化; 采用WST-1细胞增殖试验观察不同浓度PDTC作用24 h、48 h、72 h对细胞增殖的影响; 用单细胞凝胶电泳(彗星检测)方法检测PDTC对K562细胞DNA损伤的影响; 利用免疫印迹法(Western blotting)检测PDTC对K562细胞中pro-caspase-3和活化型caspase-3蛋白表达的影响。结果: 与对照组相比, 经PDTC处理的实验组K562细胞NF- $\kappa$ B/P65的活性受到明显抑制( $P < 0.01$ ); 且PDTC能以时间和剂量依赖方式抑制K562细胞的增殖( $P < 0.05$ ); 单细胞凝胶电泳显示实验组细胞DNA受损, 浓度为25  $\mu$ mol/L、50  $\mu$ mol/L、100  $\mu$ mol/L PDTC处理后, 实验组细胞DNA总损伤细胞百分率分别为43.50%、84.00%、95.63%, 明显高于对照组(9.75%),  $P < 0.05$ , 且存在明显的剂量依赖关系; Western blotting结果显示经PDTC处理后的K562细胞胞质中可检测到pro-caspase-3和活化型caspase-3蛋白的表达。结论: NF- $\kappa$ B参与白血病细胞的增殖与凋亡调控, PDTC抗肿瘤机制可能与抑制NF- $\kappa$ B活性, 上调caspase-3表达, 从而诱导细胞凋亡有关。

**关键词** [NF- \$\kappa\$ B抑制剂](#); [细胞增殖](#); [细胞凋亡](#) [K562细胞](#) [吡咯烷二硫代氨基甲酸盐](#)

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## Effect of NF- $\kappa$ B inhibitor pyrrolidine dithiocarbamate on the proliferation and apoptosis in K562 cells

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### Abstract

<FONT face=Verdana>AIM: To investigate the effect of pyrrolidine dithiocarbamate (PDTC), a specific inhibitor of NF- $\kappa$ B on the proliferation and apoptosis of K562 cells and to explore the anti-tumor mechanism of PDTC. METHODS: Trans AMTM NF- $\kappa$ B p65 kit was used to detect the activity of p65 in K562 cells treated by PDTC. The effect of PDTC on the proliferation of K562 cells was measured by WST-1 method. DNA damage was detected by single cell gel electrophoresis (comet assay). The procaspase-3 and activated protein level of caspase-3 were detected by Western blotting. RESULTS: The activity of p65 in K562 cells was inhibited after treated by PDTC ( $P < 0.01$ ). Simultaneously the cell proliferation was significantly inhibited in a dose-and time-dependent manner ( $P < 0.01$ ). The degree of DNA damage in K562 cells treated with PDTC at concentrations of 25  $\mu$ mol/L, 50  $\mu$ mol/L or 100  $\mu$ mol/L was more severe than that in control. The rates of comet cells in the PDTC-treated groups (43.50%, 84.00%, 95.63%) were significantly higher than those in control (9.75%,  $P < 0.01$ ), and it was also dose-dependent. The expression of procaspase-3 and activated caspase-3 protein were detected in the cytoplasm of the K562 cells treated by PDTC by Western blotting. CONCLUSION: NF- $\kappa$ B plays an important role in regulating cell proliferation and apoptosis in K562 cells. PDTC inhibits NF- $\kappa$ B activity and elevates the expression of caspase-3, which is related to increase in cell apoptosis.</FONT>

**Key words** [NF- \$\kappa\$ B inhibitor](#) [Cell proliferation](#) [Apoptosis](#) [K562 cells](#) [Pyrrolidine dithiocarbamate](#)

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