

论著

三氧化二砷诱导HL₆₀细胞凋亡过程中ROS、NF- κ B和C-IAP2的变化

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摘要 背景与目的: 探讨As₂O₃(arsenic trioxide, ATO)对HL₆₀细胞凋亡过程中细胞内活性氧(reactive oxygen species,ROS)水平、NF- κ B(nuclear factor kappa B),及C-IAP2(cellular inhibitor of apoptosis proteins 2)的影响。材料与方法: 以7.5 μ mol/L As₂O₃单独应用及与500 μ mol/L N-乙酰半胱氨酸(N-acetyl-L-cysteine,NAC)联合作用于HL₆₀细胞12、24 h后, 流式细胞术检测HL₆₀细胞ROS的产生量; Western blot法检测NF- κ B P65核蛋白的变化情况; 半定量RT-PCR法检测C-IAP2的相对表达量。结果: 7.5 μ mol/L的As₂O₃作用HL₆₀细胞12、24 h后细胞内ROS的生成增加, 与阴性对照比较, 差异具有统计学意义(P<0.05)。NF- κ B P65核蛋白的相对含量分别为49.3% \pm 4.4%和23.1% \pm 2.1%, C-IAP2的相对表达分别为72.9% \pm 5.8% 和59.3% \pm 4.4%, 较对照组均明显降低(P<0.05)。500 μ mol/L NAC和7.5 μ mol/L As₂O₃共同作用HL₆₀细胞12、24 h后细胞ROS生成量相对减少, 与AS₂O₃单独作用组比较, 差异具有统计学意义(P<0.05); NF- κ B P65核蛋白的相对含量分别为65.4% \pm 4.9%和37.1% \pm 3.4%, C-IAP2的相对表达量分别为81.1% \pm 5.8%和73.7% \pm 4.9%。较AS₂O₃单独作用组均明显增加(P<0.05)。结论: As₂O₃诱导HL₆₀细胞凋亡过程中, 细胞内ROS生成增加, 抑制NF- κ B活性, 同时下调其靶基因C-IAP2等的表达; NAC能阻断As₂O₃诱导HL₆₀细胞凋亡过程中ROS的生成, 部分阻断了NF- κ B活性的抑制。

关键词 [三氧化二砷](#); [活性氧](#); [NF- \$\kappa\$ B](#); [C-IAP2](#); [HL₆₀细胞](#)

Alteration of Reactive Oxygen Species, NF- κ B and C-IAP2 in Apoptosis of HL₆₀ Cell Induced by Arsenic Trioxide

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Abstract **ACKGROUND AND AIM:** To investigate the alteration of reactive oxygen species (ROS) level, the activity of nuclear factor kappa B (NF- κ B) and the expression of C-IAP2 in apoptosis of HL₆₀ cells induced by As₂O₃ (arsenic trioxide, ATO). **MATERIALS AND METHODS:** HL₆₀ cells were treated with 7.5 μ mol/L As₂O₃ alone or together with 500 μ mol/L N-acetyl-L-cysteine (NAC) for 12 and 24 h. Intracellular ROS level was measured by flow cytometry (FCM), the activity of NF- κ B p65 was determined by Western blot and the expression of C-IAP2 mRNA was determined by semi-quantitative RT-PCR. **RESULTS:** After treatment with 7.5 μ mol/L As₂O₃ for 12 and 24 h, the level of ROS increased obviously, and the relative amount of NF- κ B p65 were 49.3% \pm 4.4% and 23.1% \pm 2.1%, and the relative expressions of C-IAP2 mRNA were 72.9% \pm 5.8% and 59.3% \pm 4.4%. After co-treatment of 7.5 μ mol/L As₂O₃ and 500 μ mol/L NAC for 12 and 24 h in HL₆₀ cells, the level of ROS was decreased, the relative amount of NF- κ B p65 were 65.4% \pm 4.9% and 37.1% \pm 3.4%, and the relative expressions of C-IAP2 mRNA were 81.1% \pm 5.8% and 73.7% \pm 4.9%. **CONCLUSION:** As₂O₃ could increase the level of ROS in HL₆₀, inhibited the activity of NF- κ B and down-regulated the expression of C-IAP2 mRNA. Moreover, co-treatment of As₂O₃ and NAC could protect HL₆₀ cells from apoptosis through decreasing reactive oxygen species (ROS), prohibiting partly the suppression of the activity of NF- κ B and the expression of C-IAP2 mRNA.

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