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慢病毒介导的 HO-1基因沉默对人白血病K562细胞增殖与凋亡的影响

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马微 冯玉宽 杨玉 郭艳芹 张鹏霞

牡丹江医学院 申硕办，黑龙江 牡丹江 157011;牡丹江医学院 申硕办，黑龙江 牡丹江 157011;佳木斯大学 基础医学院 药理学教研室，黑龙江 佳木斯 154000;牡丹江医学院 附属红旗医院 神经内科，黑龙江 牡丹江 157011;佳木斯大学 基础医学院 生物化学实验室，黑龙江 佳木斯 154000

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摘要：

目的： 研究沉默血红素加氧酶1（heme oxygenase-1， HO-1 ）基因对人慢性粒细胞性白血病（chronic myelogenous leukemia，CML）K562细胞增殖与凋亡的影响。 方法： 构建靶向 HO-1基因 的重组慢病毒Lv-siRNA-HO-1，将其感染K562细胞，荧光显微镜检测其最适感染复数（multipliciy of infection，MOI）。Western blotting检测Lv-siRNA-HO-1感染组、空载体Lv-Ctrl感染组及未感染组K562细胞中HO-1蛋白的表达，CCK-8法、流式细胞术分别检测各感染组K562细胞的增殖与凋亡。 结果: 成功构建靶向 HO-1基因的 干扰表达载体PSIH1-HO-1-siRNA，包装后形成重组慢病毒Lv-siRNA-HO-1，其有效感染K562细胞 MOI值为6。与未感染组相比，Lv-siRNA-HO-1感染组K562细胞中HO-1蛋白的表达显著降低\[（0.16±0.02） vs （0.70±0 02），P<0.01\]，K562细胞增殖活性也明显下降\[（1.36±0.12） vs （2.02±0.17），P<0.01）\]，而K562细胞凋亡率则显著增加\[（62 77±4.39）% vs （14.19±1.6）%，P<0.01\]。 结论： 慢病毒介导的 HO-1基因 沉默能抑制人白血病K562细胞增殖和诱导其凋亡。

关键词：血红素加氧酶1（HO-1） 白血病 K562细胞 RNA干扰 增殖活性 凋亡 慢病毒

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Ma Wei Feng Yukuan Yang Yu Guo Yanqin Zhang Pengxia

Office of Applying for Master Degree Granting Authority, Mudanjiang Medical College, Mudanjiang 157011, Heilongjiang, China;Office of Applying for Master Degree Granting Authority, Mudanjiang Medical College, Mudanjiang 157011, Heilongjiang, China;Department of Pharmacology, Institute of Basic Medicine, Jiamusi University, Jiamusi 154000, Heilongjiang, China;Department of Internal Neurology, Red Flag Hospital Affiliated to Mudanjiang Medical College, Mudanjiang 157011, Heilongjiang, China;Laboratory of Biochemistry, Institute of Basic Medicine, Jiamusi University, Jiamusi 154000, Heilongjiang, China

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Abstract:

Objective:To explore the effect of silencing heme oxygenase-1 (HO-1) gene expression on proliferation and apoptosis of chronic myelogenous leukemia (CML) K562 cells. Methods: The recombinant lentivirus Lv-siRNA-HO-1 targeting HO-1 gene was constructed and then was infected into K562 cells, and multipliciy of infection (MOI) was detected by fluorescence microscopy. The expression level of HO-1 protein in K562 cells was examined by Western blotting in Lv-siRNA-HO-1 infection group, Lv-Ctrl infection group and uninfection group. The proliferation and apoptosis of K562 cells was detected by CCK-8 and flow cytometry, respectively. Results: The interference expression vector PSIH1-HO-1-siRNA targeting HO-1 gene was constructed successfully, and packaged to form recombinant lentiviral vector Lv-siRNA-HO-1, which was infected into K562 cells with MOI being 6. Compared with the uninfection group, the expression of HO-1 protein in K562 cells decreased significantly after Lv-siRNA-HO-1 infection (\[0.16±0.02\] vs \[0.70±0 02\], P<0.01), and the proliferation activity of K562 cells was also decreased significantly (\[1.36±0.12\] vs \[2.02±0.17\], P<0.01). However, the apoptotic rate of K562 cells was significantly increased (\[62.77±4.39\]% vs \[14.19±1.6\]%, P<0.01\]. Conclusion: Silencing HO-1 gene through lentvirus can inhibit the proliferation and induce the apoptosis of human leukemia K562 cells.

Keywords:heme oxygenase-1 （ HO-1 ） leukemia K562 cell RNA interference proliferation apoptosis lentivirus

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