中国病理生理杂志 2005 21 (3): 436-440 ISSN: 1000-4718 CN: 44-1187/R

论著

# 不饱和脂肪酸影响HepG-2细胞PAI-1表达的机制初探

贺艳丽[1，2],叶平[2△],周新[3],方红[3],王琼[4],刘永学[4]

1华中科技大学协和医院干细胞研究中心， 湖北 武汉 430022；2解放军总医院老年心内科，北京 100853；3武汉大学中南医院基因诊断中心， 湖北 武汉 430071；4北京放射医学研究所药理毒理室，北京 100850

收稿日期 2003-8-22 修回日期 2003-10-23 网络版发布日期 2009-9-14 接受日期 2003-10-23

摘要 目的：探讨不饱和脂肪酸对HepG-2细胞纤溶酶原激活物抑制剂-1(PAI-1)表达的影响及其机制。方法：以发色底物法检测PAI-1活性，RT-PCR法检测PAI-1 mRNA水平；构建两个含不同片段缺失的PAI-1启动子序列控制表达的氯霉素转移乙酰酶（CAT）报告基因质粒，转染HepG-2细胞，ELISA法检测CAT表达量。结果：油酸、亚油酸诱导下HepG-2细胞PAI-1mRNA表达及蛋白活性显著高于对照组；共转染过氧化体增殖物激活型受体表达质粒（PPARα-pSG5）PAI-1转录活性显著增加；转染NF-κB样蛋白结合序列缺失的重组质粒，亚油酸诱导下PAI-1转录活性显著增加，而转染VLDL/脂肪酸反应元件缺失的重组质粒则无显著变化。结论： 不饱和脂肪酸增强HepG-2细胞PAI-1 mRNA表达及活性；PPARα可能是其上调PAI-1表达所涉及的转录因子之一，且VLDL/脂肪酸反应元件在该调控中具有重要作用，但可能并不涉及NF-κB信号转导途径。

关键词 脂肪酸类,不饱和； 纤溶酶原激活物抑制物 1； HepG-2细胞

分类号 R363

# Mechanism of unsaturated fatty acids influencing plasminogen activator inhibitor-1 expression in HepG-2 cells

HE Yan-Li[1,2], YE Ping[2], ZHOU Xin[3], FANG Hong[3], WANG Qiong[4], LIU Yong-Xue[4]

1 Center of Stem Cells Research and Applying, Union Hospital, Huazhong University of Science and Technology, Wuhan 430022, China; 2 Department of Geriatric Cardiology, Chinese PLA General Hospital, Beijing 100853, China; 3 Center of Gene Diagnosis, Zhongnan Hospital, Wuhan University, Wuhan 430071, China; 4 Department of Pharmacology and Toxicology, Beijing Institute of Radiation Medicine, Beijing 100850, China

**Abstract**

<FONT face=Verdana>AIM: To investigate the influence and mechanisms of unsaturated fatty acid on PAI-1 expression in HepG-2 cells. METHODS: PAI-1 activity and mRNA expression were determined by colorimetric assay and RT-PCR, respectively. Two types of CAT reporter gene plasmid containing different deletions in PAI-1 promoter were constructed and transfected into HepG-2 cells, respectively. The transcriptional activity of PAI-1 was demonstrated by the CAT's expression. RESULTS: The mRNA and activity of PAI-1 significantly increased in the groups of oleic acid and linoleic acid compared with the control. When co-transfected with PPARα-pSG5, the level of PAI-1 transcription was significantly increased. In the HepG-2 cells transfected with NF-κB-like sequence-deletion-pCAT construct linoleic acid, the PAI-1 transcriptional activity increased, and no significant change was observed when transfected with VLDL/fatty acid response element-deletion-pCAT construct. CONCLUSIONS: Unsaturated fatty acids induce PAI-1 activity and mRNA expression in HepG-2 cells. PPARα may be one of transcription factors playing a role in the regulation of PAI-1 gene expression. The VLDL/fatty acid response element in the PAI-1 promoter may play an important role in the regulation, but not the NF-κB-like sequence.</FONT>

**Key words** Fatty acids unsaturated Plasminogen activator inhibitor 1 HepG-2 cells

DOI: 1000-4718

---

通讯作者 叶平