中国公共卫生 2013, 29(5) 704-707 DOI: 10.11847/zgggws2013-29-05-27 ISSN: 1001-0580 CN: 21-1234/R

论文

α-硫辛酸对糖尿病大鼠肝脏损伤保护作用

王国贤[1], 康雅萍[1], 魏慧芳[2], 魏小刚[3]

1. 辽宁医学院药理教研室,辽宁 锦州 121001;
2. 辽宁医学院教务处;
3. 潍坊医学院人体解剖学教研室

摘要:

目的 探讨α-硫辛酸对糖尿病肝病大鼠肝纤维化的保护作用及其机制。方法 SD大鼠随机分为对照组(*n*=10)、糖尿病肝病组(*n*=8,腹腔注射链脲佐菌素60 mg/kg+皮下注射40%四氯化碳0.2 mL/100 g)及α-硫辛酸低、中、高剂量组(*n*=9,灌胃给予15、30、60 mg/kg α-硫辛酸,连续12周),检测血糖和肝组织中丙二醛、谷胱甘肽过氧化物酶(GSH-Px)、超氧化物歧化酶(SOD)水平、肝组织中基质金属蛋白酶9(MMP-9)和金属蛋白酶组织抑制因子1(TIMP-1)蛋白表达。结果 与对照组比较,糖尿病肝病组大鼠血糖[(25.45±3.24)mmol/L]和丙二醛[(11.90±3.38)μg/mg • pro]含量均升高,SOD、GSH-Px活性[(38.45±6.73)、(19.54±2.24) μg/mg • pro]均降低,MMP-9和TIMP-1蛋白表达量及MMP-9/TIMP-1比值均降低(*P*<0.01);与糖尿病肝病组比较,α-硫辛酸中剂量组大鼠血糖[(14.25±3.23) mmol/L]及丙二醛含量[(8.05±2.13) μg/mg • pro]均降低,SOD、GSH-Px活性[(46.95±6.13)、(25.14±3.23) μg/mg • pro]均升高(*P*<0.01),MMP-9和TIMP-1蛋白表达量及MMP-9/TIMP-1比值均升高(*P*<0.01)。结论 α-硫辛酸对糖尿病肝病大鼠肝脏组织具有保护作用,其机制可能与抗氧化过程有关。

关键词: α-硫辛酸 糖尿病肝纤维化 基质金属蛋白酶9(MMP-9) 金属蛋白酶组织抑制因子1(TIMP-1)

Protective effect of α-lipoic acid on liver injury among diabetes mellitus rats

WANG Guo-xian, KANG Ya-ping, WEI Hui-fang, et al

Department of Pharmacology,Liaoning Medical College,Jinzhou,Liaoning Province 121001,China

Abstract:

Objective To investigate protective effect and mechanism of α-lipoic acid on liver disease and hepatic fibrosis in diabetic rats.Methods The Sprague-Dawley rats were randomly divided into 5 groups:normal control group(*n*=10),model group of diabetic liver disease induced by streptozotocin(60 mg/kg) intraperitoneal injection+tetrachloride carbon(*n*=8),low-dose α-lipoic acid group(15 mg/kg • d intragastirc administration for 12 weeks,*n*=9),medium-dose α-lipoic acid group(30 mg/kg • d intragastirc administration for 12 weeks,*n*=9),and high-dose α-lipoic acid group(60 mg/kg • d intragastirc administration for 12 weeks,*n*=9).Levels of malondialdehyde,glutathione peroxidase(GSH-Px),superoxide dismutase(SOD),and blood glucose in blood and liver tissue of the rats were measured.Expression of matrix metalloproteinase 9(MMP-9) and tissue inhibitor of metalloproteinase factor-1(TIMP-1) protein expression were determined with immunohistochemistry and western blot.Results Compared with the normal control group,blood glucose(25.45±3.24 mmol/L) and malondialdehyde(11.90±3.38 ug/mg • pro) were increased,while SOD(38.45±6.73 mmol/L),GSH-Px(19.54±2.24 mmol/L),MMP-9,TIMP-1,and MMP-9/TIMP-1 were reduced(*P*<0.01 for all).Compared with the model group,blood glucose(14.25±3.23 mmol/L) and malondialdehyde(8.05±2.13 mmol/L) of medium-dose α -lipoic acid group were reduced (*P*<0.01),and SOD(46.95±6.13 mmol/L),GSH(25.14±3.23 mmol/L),MMP-9,TIMP-1,and MMP-9/TIMP-1 were increased(*P*<0.01 for all).Conclusion The study shows that α-lipoic acid has protective effect on liver tissue of diebetic rat.The mechanism probably relates to the reduce of oxide stress,attenuation of extracellular matrix,and inhibition of liver fibrosis.

Keywords: α-lipoic acid diabetic liver fibrosis matrix metalloproteinase-9 tissue inhibitors of matrix metalloproteinase-1

收稿日期 2012-07-03 修回日期 网络版发布日期

DOI: 10.11847/zgggws2013-29-05-27

基金项目:

扩展功能
本文信息
Supporting info
PDF(1120KB)
[HTML全文]
参考文献
服务与反馈
把本文推荐给朋友
加入我的书架
加入引用管理器
引用本文
Email Alert
文章反馈
浏览反馈信息
本文关键词相关文章
α-硫辛酸
糖尿病肝纤维化
基质金属蛋白酶9(MMP-9)
金属蛋白酶组织抑制因子1(TIMP-1)
本文作者相关文章
王国贤
康雅萍
魏慧芳
魏小刚
PubMed
Article by WANG Guo-xian
Article by KANG Ya-ping
Article by WEI Hui-fang
Article by et al

通讯作者:

作者简介:

参考文献：

[1] Hickman IJ,Macdonald GA.Impact of diabetes on the severity of liver disease[J].Am J Med,2007,120 (10) :829-834.
[2] Li CJ,Lv L,Li H,et al.Cardiac fibrosis and dysfunction in experimental diabetic cardiomyopathy are ameliorated by alpha-lipoic acid[J].Cardiovasc Diabetol,2012,11(1):73.
[3] 董媛,蔡美琴.α-硫辛酸对外周器官氧化损伤的保护作用[J].中华临床营养杂志,2010,18(3):187-190.
[4] 王俐,蔡美琴.α-硫辛酸在糖尿病治疗中的临床应用价值[J].中华临床营养杂志,2010,18(5):323-326.
[5] Son SM.Reactive oxygen and nitrogen species in pathogenesis of vascular complications of diabetes [J].Diabetes Metab J,2012,36(3):190-198.
[6] 刘友良,黄平.基质金属蛋白酶-2与肿瘤关系的研究进展[J].现代肿瘤医学,2006,14(1):109-111.
[7] Guo M,Wu MH,Korompai F,et a1.Upregulation of PKC gene and isozymes in cardiovascular tissues during early stages of experimental diabetes[J].Physiol Genomics,2003,12(2):139-146.
[8] Peart JN,Headrick JP.Sustained cardioprotection:exploring unconventional modalities[J].Vascul Pharmacol,2008,49(3):63-70.
[9] Eyibilen A,Cayli S,Aladag I,et al.Distribution of matrix metalloproteinases MMP-1,MMP-2,MMP-8 and tissue inhibitor of matrix metalloproteinases-2 in nasal polyposis and chronic rhinosinusitis[J].Histol Histopathol,2011,26(5):615-621.
[10] 万为国,蒋学俊,李晓艳,等.糖尿病大鼠不同阶段肝脏内MMP-9与TIMP-1表达及全反式维甲酸的干预作用[J].疑难病杂志,2008,7(6):323-326.
[11] Nie QH,Duan GR,Iao XD,et a1.Expression of TIMP-1 and TIMP-2 in rats with hepatic fibrosis[J].World J Gasnmnterol,2004,10(1):86-90.

本刊中的类似文章

1．李兆钢, 王国贤, 刘珊珊, 李瑞芳, 李飞.α-硫辛酸对高糖诱导下乳鼠心肌细胞作用[J]. 中国公共卫生, 2013,29 (1): 69-71
2．李瑞芳, 王国贤, 康雅萍.α-硫辛酸对糖尿病大鼠内质网应激介导影响[J]. 中国公共卫生, 2013,29(3): 390-392

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人		邮箱地址	
反馈标题		验证码	7877

Copyright 2008 by 中国公共卫生