[1]周曦,易龙,金鑫,等.SIRT1/UCP2通路在白藜芦醇抑制血管内皮细胞氧化应激损伤中的作用[J].第三军医大学学报,2013,35(16):1671-1675.
Zhou Xi,Yi Long,Jin Xin,et al.Role of SIRT1/UCP2 signaling pathway in resveratrol-induced inhibition of oxidative injury in vascular endothelial cells[J].J Third Mil Med Univ,2013,35(16):1671-1675.

点击复制

导航/NAVIGATE
本期目录/Table of Contents
下一篇/Next Article
上一篇/Previous Article
工具/TOOLS
引用本文的文章/References
下载 PDF/Download PDF(1070KB)
立即打印本文/Print Now
查看/发表评论/Comments
导出
统计/STATISTICS
摘要浏览/Viewed 311
全文下载/Downloads 135
评论/Comments
RSS XML

SIRT1/UCP2通路在白藜芦醇抑制血管内皮细胞氧化
用(PDF)
分享到:

《第三军医大学学报》[ISSN:1000-5404/CN:51-1095/R] 卷: 35 期数: 2013年第16期 页码: 1671-1675 栏目: 论著 出版日期: 2013-08-30

Title: Role of SIRT1/UCP2 signaling pathway in resveratrol-induced inhibition of oxidative injury in vascular endothelial cells

作者: 周曦; 易龙; 金鑫; 陈明亮; 陈春烨; 王丽; 高燕翔; 施琳颖; 糜漫天
第三军医大学军事预防医学院营养与食品安全研究中心，重庆市营养与食品安全重点实验室，重庆市医学营养研究中心

Author(s): Zhou Xi; Yi Long; Jin Xin; Chen Mingliang; Chen Chunye; Wang Li; Gao Yanxiang; Shi Linying; Mi Mantian
Center for Nutrition and Food Safety Research, Chongqing Key Laboratory of Nutrition and Food Safety, Chongqing Center of Medical Nutrition Research, College of Military Preventive Medicine, Third Military Medical University, Chongqing, 400038, China

关键词: 动脉粥样硬化; 白藜芦醇; 人脐静脉内皮细胞; 氧化应激; SIRT1; UCP2

Keywords: atherosclerosis; resveratrol; human umbilical vein endothelial cells; oxidative stress; silent mating type information regulation 2 homolog 1; uncoupling protein 2

分类号: R151.3;R329.26;R543

文献标志码: A

摘要: 目的　观察白藜芦醇对血管内皮细胞氧化应激损伤的抑制作用，并围绕SIRT1/UCP2信号通路探讨其作用机制。　方法　原代培养人脐静脉内皮细胞（human umbilical vein endothelial cells,HUVECs），用叔丁基过氧化氢（t-BHP）建立HUVECs氧化应激损伤模型。CCK-8法检测细胞增殖，确定半抑制浓度（IC_{50}）。荧光分光光度计检测细胞内活性氧（ROS）生成。CCK-8法检测白藜芦醇对t-BHP诱导的HUVECs活力的影响；qRT-PCR法检测白藜芦醇对SIRT1和UCP2 mRNA表达的影响；Western blot法检测白藜芦醇对SIRT1、UCP2和Caspase-3在细胞内蛋白表达的影响。　结果　t-BHP明显抑制细胞活力，IC_{50}为80 μmol/L。白藜芦醇（0.1、1、10 μmol/L）预处理2 h能显著抑制t-BHP诱导的细胞活力下降（$P<0.05$），并抑制t-BHP诱导的细胞内ROS增加（$P<0.05$）。同时，白藜芦醇能明显抑制t-BHP诱导的SIRT1的mRNA和蛋白表达下降、UCP2的mRNA和蛋白表达升高及Caspase-3表达增加（$P<0.05$），而Sirt1抑制剂尼克酰

胺能削弱白藜芦醇的抑制作用。　　结论　　白藜芦醇可能通过活化SIRT1抑制UCP2表达，削弱t-BHP诱导的细胞内ROS生成，从而抑制血管内皮细胞氧化应激损伤。

Abstract: Objective To assess the role of silent mating type information regulation 2 homolog 1/uncoupling protein 2 (SIRT1/UCP2) signaling pathway in the inhibition of oxidative damage in vascular endothelial cells by resveratrol. Methods Human umbilical vein endothelial cells (HUVECs) were isolated and primarily cultured. The obtained cells were treated by tert-butyl hydroperoxide (t-BHP) at the concentrations of 20, 30, 40, 50, 60, 70, 80, 90 and 100 μmol/L respectively for 24 h, and CCK-8 assay was used for cell viability to determine the IC_{50} value. The intracellular level of reactive oxygen species (ROS) was observed by fluorospectrophotometry. The expression of SIRT1 and UCP2 at mRNA level was determined by qRT-PCR assay. The protein expression of SIRT1, UCP2 and Caspase-3 were determined by Western blot assay. Results Cell viability was significantly inhibited by t-BHP treatment （P<0.05）and the IC_{50} value was identified as 80 μmol/L. Pretreatment with resveratrol at the doses of 0.1, 1, and 10 μmol/L significantly inhibited the decrease of cell viability （P<0.05） and the increase of intracellular ROS level induced by t-BHP. Furthermore, the mRNA and protein expression of SIRT1 were up-regulated by resveratrol pretreatment, and that of UCP2 was down-regulated, yet which was abolished by niacinamide pretreatment. Conclusion Resveratrol may suppress the expression of UCP2 by activating SIRT1, and attenuate the increase of intracellular ROS level induced by t-BHP, and thus, inhibit t-BHP-induced endothelial injury.

参考文献/REFERENCES:

周曦，易龙，金鑫，等. SIRT1/UCP2通路在白藜芦醇抑制血管内皮细胞氧化应激损伤中的作用[J].第三军医大学学报,2013,35(16):1671-1675.

相似文献/REFERENCES:

[1]李明,孙守兵,周越,等.去甲肾上腺素诱导人巨噬细胞MMP-9的表达及机制[J].第三军医大学学报,2012,34(17):1758.
Li Ming,Sun Shoubing,Zhou Yue,et al.Norepinephrine induces expression of matrix metalloproteinase-9 in human macrophages and its mechanisms[J].J Third Mil Med Univ,2012,34(16):1758.

[2]王柯静,程渝,周远大.野马追提取液对动脉粥样硬化家兔炎症反应的防治作用[J].第三军医大学学报,2012,34(18):1853.
Wang Kejing,Cheng Yu,Zhou Yuanda.Lindley eupatorium herb extract prevents and attenuates vascular inflammation reaction in atherosclerosis rabbits[J].J Third Mil Med Univ,2012,34(16):1853.

[3]黄家贵,沈长波,刘舒,等.白藜芦醇诱导大鼠骨髓基质细胞的神经元样细胞分化伴Shh信号激活[J].第三军医大学学报,2013,35(04):280.
Huang Jiagui,Shen Changbo,Liu Shu,et al.Resveratrol induces differentiation of rat bone marrow stromal cells into neuron-like cells via Shh signaling activation in vitro[J].J Third Mil Med Univ,2013,35(16):280.

[4]蒙颖,徐芳,王志禄,等.罗格列酮对泡沫细胞中胆固醇贮存与运输相关蛋白ACAT-1、ABCA-1表达的影响[J].第三军医大学学报,2012,34(22):2288.
Meng Ying,Xu Fang,Wang Zhilu,et al.Effect of rosiglitazone on expression of acyl-coenzyme A cholesterol acyltransferase 1 and ATP-binding cassette transporter A1 in foam cells[J].J Third Mil Med Univ,2012,34(16):2288.

[5]黄朝晖,吴雄飞,赵洪雯,等.ApoE－/－小鼠肾动脉狭窄及肾损害特点观察[J].第三军医大学学报,2007,29(19):1844.
HUANG Zhao-hui,WU Xiong-fei,ZHAO Hong-wen,et al.Atherosclerotic renal artery stenosis and renal injury in apolipoprotein E knockout mouse[J].J Third Mil Med Univ,2007,29(16):1844.

[6]彭丹丹,李志梁.冠状动脉粥样硬化性心脏病患者单核细胞CX3CR1表达的研究[J].第三军医大学学报,2008,30(06):546.
PENG Dan-dan,LI Zhi-liang.CX3CR1 expressions in monocytes from patients with coronary heart diseases[J].J Third Mil Med Univ,2008,30(16):546.

[7]彭侃夫,赵洪雯,余荣杰,等.晚期氧化蛋白产物诱导血管平滑肌细胞表达MCP-1及其信号转导通路的研究[J].第三军医大学学报,2008,30(02):101.
PENG Kan-fu,ZHAO Hong-wen,YU Rong-jie,et al.Signal transduction of advanced oxidation protein products induced MCP-1 expressions in vascular smooth muscle cells[J].J Third Mil Med Univ,2008,30(16):101.

[8]李骊华,雷寒.不同剂量厄贝沙坦对兔主动脉粥样硬化中环氧合酶2的影响[J].第三军医大学学报,2008,30(10):917.
LI Li-hua,LEI Han.Effect of Irbesartan on cyclooxygenase-2 in aortic atherosclerotic lesion in rabbits[J].J Third Mil Med Univ,2008,30(16):917.

[9]申丽丽,彭家和,刘红,等.法尼酯X受体对脂肪酸合酶表达的影响[J].第三军医大学学报,2007,29(22):2142.
SHEN Li-li,PENG Jia-he,LIU Hong,et al.Effects of farnesoid X receptor on expression of fatty acid synthetase in HepG2 cells[J].J Third Mil Med Univ,2007,29(16):2142.

[10]李琴山,刘洋,冯赞杰,等.单核细胞趋化蛋白-1对人脐静脉内皮细胞凋亡的影响[J].第三军医大学学报,2007,29(17):1682.
LI Qin-shan,LIU Yang,FENG Zan-jie,et al.Monocyte chemotactic protein-1 induces the apoptosis of human umbilical vein endothelial cells[J].J Third Mil Med Univ,2007,29(16):1682.

[11]陈明亮,易龙,金鑫,等.白藜芦醇对TNF-α诱导的血管内皮细胞炎性反应的影响[J].第三军医大学学报,2012,34(13):1255.
Chen Mingliang,Yi Long,Jin Xin,et al.Effect of resveratrol on TNF-α-induced vascular endothelial inflammation in vitro [J].J Third Mil Med Univ,2012,34(16):1255.

更新日期/Last Update: 2013-08-02