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论文

CYP1B1对肥胖小鼠脂肪组织血管新生因子影响

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摘要:

目的 探讨血管新生因子血管生成素Ⅰ和Ⅱ在保护幼年细胞色素P4501B1(CYP1B1)基因敲除小鼠营养性肥胖中作用。方法 CYP1B1基因敲除和野生型雄性C57/BL小鼠(3周龄)各16只,给予低脂膳食(10%脂肪)、高脂膳食(60%脂肪)饲料11周;小鼠处死后取附睾脂肪组织检测血管密度及血管新生因子基因和蛋白表达。结果 野生高脂组小鼠脂肪组织血管密度下降,基因敲除小鼠脂肪组织血管分布不受影响;高脂膳食诱导下,野生型和基因敲除小鼠血小板-内皮细胞粘附分子CD31 mRNA表达下调($P<0.05$),野生型小鼠CD31蛋白表达下调($P<0.05$);与野生低脂组比较,高脂诱导后野生型和基因敲除小鼠血管生成素Ⅰ表达量分别为0.35和0.50($P<0.05$),瘦素表达量则分别为2.48和1.42($P<0.05$);敲除高脂组瘦素表达量较野生高脂组下降($P<0.05$)。结论 CYP1B1基因敲除对血管新生相关因子的调控可能在其营养性肥胖中起一定保护作用。

关键词: 血管新生因子 细胞色素P4501B1(CYP1B1) 肥胖

Effect of CYP1B1 on adipose tissue angiogenic factor in young obese mice

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Abstract:

Objective To explore the effect of angiogenesis on protecting young mice obesity by cytochrome (CYP1B1) deletion.Methods Sixteen male CYP1B1 deficient mice and sixteen wild type(WT) mice (C57/BL,3-week-old,right after weaning) were randomly divided into low-fat-diet(LFD,10% fat) and high-fat-diet(HFD,60% fat) groups for 11 weeks feeding.The body weight and food consumption were recorded every 3 days.The mice were sacrificed at the age of 12 weeks by decapitation and epididymal fat pad was quickly removed.Part of tissue was snap frozen in liquid nitrogen to extract total RNA for real time-PCR(RT-PCR) and another part of tissue was fixed in 4% parafomaldehyde(PFA) for sectioning and immunofluorescence detecting.Results HFD significantly downregulated WT mice CD31 expression in both transcription and translation levels,while CYP1B1 deletion rescued this inhibiton.Knockout(KO) mice exhibited higher level of angiopoietin-1 than that in WT mice on basal condition,and HFD supressed its expression in both WT and KO mice while kept angoipoietin-2 unchanged.Pro-angiogenic factor-leptin was greatly increased by HFD in mice of the two groups and CYP1B1 deletion suppressed this action.Conclusion Modulation of angiogenic factors expression and endothelial cell density by CYP1B1 deletion might play an important role in protecting the mice from HFD induced obesity,however,the detail and its mechanism need further investigation.

Keywords: angiopoietin CYP1B1 obesity

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