

论著

Adiponectin 基因转染对肌细胞糖原合成和葡萄糖氧化的影响

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摘要 目的: 研究adiponectin对C2C12肌细胞糖原合成和葡萄糖氧化的影响。方法: 用阳离子脂质体介导转染和随后G418筛选建立稳定转染小鼠adiponectin cDNA真核表达质粒(pcDNA3.0-mad)及空载pcDNA3.0的C2C12细胞株并鉴定。C2C12肌细胞糖代谢实验分对照组、空载体组和pcDNA3.0-mad(mad)组共3组进行, 每组又分 0、0.5、5、100 nmol/L胰岛素刺激4个亚组。通过液闪测定细胞合成的糖原中[14C]的放射活性和氧化产生的[14CO₂], 分别检测肌细胞的糖原合成和葡萄糖氧化情况。结果: Western blotting和免疫组化检测证实mad组细胞表达adiponectin蛋白。Mad组葡萄糖氧化量随胰岛素浓度增加的速率较其它两组快, 对照、空载体和mad组线性回归系数分别为23.34、23.23和26.06。Mad组C2C12肌细胞基础状态下和胰岛素刺激下的葡萄糖氧化和糖原合成与其它两组无显著差异(P>0.05)。结论: 转染adiponectin基因对C2C12肌细胞葡萄糖氧化和糖原合成无显著影响。

关键词 [基因,adiponectin](#); [小鼠](#); [肌](#); [糖原](#); [葡萄糖氧化](#)

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Effects of adiponectin cDNA transfection on glycogen synthesis and glucose oxidation in myotubes

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Abstract

AIM: To study the effects of adiponectin on glycogen synthesis and glucose oxidation in C2C12 myotubes. METHODS: Plasmid pcDNA3.0-mad with cDNA of mouse adiponectin, and vector pcDNA3.0 were transfected into C2C12 cells by lipofectAMINE 2000 reagent, respectively. Stably transfected cells were screened by 500 mg/L G418 for 3 weeks. Adiponectin protein expression was determined by Western blotting analysis and immuno-histochemistry. Glucose oxidation and glycogen synthesis detections were divided into control, vector and pcDNA3.0-mad (mad) group. Each group was further divided into 4 subgroups with 0, 0.5 nmol/L, 5 nmol/L or 100 nmol/L insulin (n=6), respectively. Detection of glucose oxidation and glycogen synthesis was carried out with [14C]-labeled glucose by counting radioactivity of [14CO₂] or [14C] labeled glycogen with scintillation, respectively. RESULTS: Adiponectin protein expression was only detected in the mad group by either Western blotting analysis or immunostaining. The rate of glucose oxidation increased more with the elevation of insulin concentration in the mad group than that in other 2 groups: the regression coefficient of control, vector and mad group was 23.34, 23.23 versus 26.06, respectively. No significant difference in either basic or insulin-stimulated glucose oxidation and glycogen synthesis between mad group and the other two groups was observed (P>0.05). CONCLUSION: Transfection with adiponectin cDNA has no significant effect on the glucose oxidation and glycogen synthesis in C2C12 myotubes.

Key words [Genes](#) [adiponectin](#) [Mice](#) [Muscles](#) [Glycogen](#) [Glucose oxidation](#)

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