中国中药杂志
China Journal of Chinese Materia Medica

甘草3-羟基-3-甲基戊二酰辅酶A还原酶基因多态性对其编码酶催化效率的影响

投稿时间： 2012-11-06 责任编辑： 点此下载全文

引用本文：刘颖,许巧仙,王学勇,刘春生,陈宏昊.甘草3-羟基-3-甲基戊二酰辅酶A还原酶基因多态性对其编码酶催化效率的影响[J].中国中药杂志,2012,37(24):3784.

DOI：10.4268/cjcmm20122421

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基金项目:国家自然科学基金项目(81072988)

中文摘要:目的:利用GC-MS方法分析甘草不同3-羟基-3-甲基戊二酰辅酶A还原酶(HMGR)基因型表达蛋白的催化效率,为揭示甘草HMGR多态性在优质甘草药材形成中的作用奠定基础。方法:以从甘草中克隆的4种HMGR基因突变型构建表达载体,转化*Escherichia coli* BL21,进行诱导表达、检测、纯化及体外酶促反应,采用TLC及GC-MS对反应产物进行定性及定量分析。结果:L/V型突变(-HSL,-HSV)催化活性近似,GA插入型突变(GALLV,GALSV)催化活性近似,但插入型突变的催化活性显著高于前者,是前者的2倍左右。结论:甘草功能基因*HMGR*基因多态性可能是甘草优质药材形成的分子基础。

中文关键词:甘草 3-羟基-3-甲基戊二酰辅酶A还原酶(HMGR)基因 基因多态性 MVA

Researches on the influence of 3-hydroxy-3-methylglutary-coenzyme A reductase gene polymorphism on catalytic efficiency of its encode enzyme in *Glycyrrhiza uralensis*

Abstract:Objective: To analyse the effect of expression proteins containing different escherichia coli of 3-hydroxy-3-methylglutary-coenzyme A reductase(HMGR) genic mutation on the conversion efficiency of MVA with GC-MS method,in order to lay a foundation for revealing the function of *HMGR* gene polymorphism of *Glycyrrhiza uralensis* in the production of high-quality *G. uralensis* medicines. **Method:** The expression carrier was established from four *HMGR* genic mutation types cloned from *G. uralensis* and transformed into *Escherichia coli* BL21. The protein was induced to express, detected and purified. The purified protein was adopted for in vitro enzymatic reaction. TLC and GC-MS were used for qualitative and quantitative analysis on reaction products. **Result:** The catalytic activity of L/V genotype(-HSL and -HSV) was similar, and so was the catalytic activity of the genotype with GA insertion(GALLV and GALSV), but the catalytic activity of the latter was around 2 times higher than that of the former. **Conclusion:** The functional gene polymorphism of *G. uralensis* may be the molecular foundation for the production of high-quality *G. uralensi* medicines.

keywords: *Glycyrrhiza uralensis* 3-hydroxy-3-methylglutary-coenzyme A reductase(HMGR) gene gene polymorphism MVA

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