中国农业科技导报 2011, 13(3) 47-52 DOI: 10.3969/j.issn.1008-0864.2011.03.08 ISSN: 1008-0864 CN: CN 11-3900/S

生物技术 生命科学

谷氨酸棒杆菌麦芽寡糖基海藻糖水解酶基因的克隆与表达

常敏,乔宇,丁宏标

(中国农业科学院饲料研究所, 北京 100081)

摘要:

从谷氨酸棒杆菌(Corynebacterium glutamicum)基因组中克隆到麦芽寡糖基海藻糖水解酶基因(treZ),将其插入大肠杆菌表达载体pRSET-B并转化宿主菌E.coli BL21(DE3)pLysS获得重组基因工程菌。经IPTG诱导表达,得到麦芽寡糖基海藻糖水解酶,溶解表达的目的蛋白约占胞内总蛋白的40%,有部分目的蛋白形成包涵体。经薄层层析与离子色谱共同检测证实,该麦芽寡糖基海藻糖水解酶(MTHase)与麦芽寡糖基海藻糖合成酶(MTSase)共同作用于糊精溶液,可得到产物海藻糖,具有工业应用前景。

关键词: 麦芽寡糖基海藻糖水解酶;糊精;重组表达

Cloning and Expression of Maltooligosyltrehalose Trehalohydrolase Gene from Corynebacterium glutamicum

CHANG Min, QIAO Yu, DING Hong-biao

(Feed Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, China)

Abstract:

A DNA fragment ecoding maltooligosyl trehalose trehalohydrolase (treZ) was cloned from Corynebacterium glutamicum. It was inserted into prokaryotic expression vector pRSET-B and then was introduced into the host Escherichia coli BL21 (DE3) pLysS. A recombinant enzyme was obtained by IPTG induction. In cell disruption supernatant, the soluble recombinant enzyme accounted for about 40% of the total cell proteins, but some of the recombinant protein expressed as inclusion bodies. The activity of the recombinant enzyme was analyzed by Thin Layer Chromatography and Ion Chromatography. It was proved that the soluble enzyme together with maltooligosyl trehalose synthase was capable of decreasing dextrin to produce trehalose. The result showed applied prospect in industry.

Keywords: maltooligosyl trehalose trehalohydrolase dextrin recombinant expression

收稿日期 2011-01-07 **修回日期** 2011-03-10 **网络版发布日期** 2011-04-29

DOI: 10.3969/j.issn.1008-0864.2011.03.08

基金项目:

中央级公益性科研院所基本科研业务费专项(22060302);中国农业科学院北京畜牧兽医研究所基本科研业务费项目(2010QY03)资助。

通讯作者: 丁宏标,研究员,博士生导师,主要从事饲料生物技术研究。Tel:010-82106071; E-mail:dinghongbiao@mail.caas.net.cn

作者简介: 常敏,硕士研究生,主要从事饲料生物技术研究。E-mail:changminwy@yahoo.com.cn。

作者Email:

参考文献:

本刊中的类似文章