

论文

发酵乳杆菌β-半乳糖苷酶转糖基活性研究

陆文伟, 孔文涛, 孔 健, 季明杰*

山东大学微生物技术国家重点实验室, 山东 济南 250100

摘要:

从传统发酵乳制品中筛选到1株转糖基活性较高的乳杆菌, 经16S rDNA菌种鉴定为发酵乳杆菌(Lactobacillus fermentum, EU621851) K4。以乳糖为底物, 研究β-半乳糖苷酶粗酶液在不同pH、乳糖浓度、反应温度和时间的转糖基活性。结果表明在pH 5.5、乳糖20%、温度50℃条件下反应48h, 转糖基活性最高, 能生成多种低聚半乳糖。研究发现在低乳糖含量(5%)和pH 5~7范围内都具有明显的转糖基活性。用牛奶为原料进行转糖基能力测定, 结果该酶既能降低牛乳中的乳糖含量, 又能生成低聚半乳糖。因此, 菌株Lb. fermentum K4在乳制品发酵中具有潜在的应用价值。

关键词: 发酵乳杆菌 半乳糖苷酶 转糖基活性 低聚半乳糖

Transgalactosylation activity of beta-galactosidase produced by Lactobacillus fermentum K4

LU Wen-wei, KONG Wen-tao, KONG Jian, JI Ming-jie*

State Key Laboratory Microbial Technology, Shandong University, Jinan 250100, Shandong, China

Abstract:

lactobacilli strain producing beta-galactosidase with high transgalactosylation activity was isolated from Chinese traditional fermented milk. It was identified as Lactobacillus fermentum K4 (EU621851) by sequence analysis of its 16S rDNA. The conditions for transgalactosylation activity were optimized, and the large yield of galactooligosaccharides with various kind of oligosaccharides was obtained by using 20% lactose as a substrate at pH 5.5, 50℃ for 48h. Moreover, the beta-galactosidase produced by Lb. fermentum K4 exhibited obvious transgalactosylation activity even at conditions of low lactose concentration (5%) and pH in the range of 5 to 7. The fresh milk was mixed with beta-galactosidase extracted from Lb. fermentum K4 at 50℃ for 8h, the content of lactose in the milk was reduced and galactooligosaccharides were produced. Therefore, Lb.fermentum K4 will have potential use in fermented dairy products.

Keywords:

Lactobacillus fermentum transgalactosylation activity beta-galactosidase galactooligosaccharides

收稿日期 1900-01-01 修回日期 1900-01-01 网络版发布日期 2006-10-24

DOI:

基金项目:

通讯作者: 季明杰

作者简介:

本刊中的类似文章

扩展功能

本文信息

Supporting info

PDF(OKB)

[HTML全文](OKB)

参考文献[PDF]

参考文献

服务与反馈

把本文推荐给朋友

加入我的书架

加入引用管理器

引用本文

Email Alert

文章反馈

浏览反馈信息

本文关键词相关文章

▶ 发酵乳杆菌

▶ 半乳糖苷酶

▶ 转糖基活性

▶ 低聚半乳糖

本文作者相关文章

▶ 陆文伟

▶ 孔文涛

▶ 孔 健

▶ 季明杰*