

论文

可控性自裂解乳球菌的构建

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摘要:

为阐明发酵乳杆菌温和噬菌体 $\phi$ PYB5编码的由穿孔素(Hyb5)和裂解素(Lyb5)组成的裂解盒在乳酸菌中的作用特征, 将hyb5-lyb5基因克隆到E. coli/L. lactis穿梭质粒pSEC的nisin诱导型启动子下游, 构建了重组质粒pSEC-hyb5-lyb5。将pSEC-hyb5-lyb5电转入Lactococcus lactis NZ9000, 获得重组菌株NZphi。经nisin诱导表达后, Hyb5-Lyb5表现出高的裂解活性, 使NZphi菌液的浊度(OD600)急剧下降, 并释放出大量胞内蛋白, 为利用自裂解菌株生产优质乳制品奠定了基础。

关键词: 温和噬菌体 裂解盒 穿孔素 裂解素

Construction of a controlled autolysis Lactococcus strain

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Abstract:

To elucidate the characterization of the lysis cassette (Hyb5-Lyb5) encoded by temperate bacteriophage  $\phi$ PYB5 of Lactobacillus fermentum, the hyb5 and lyb5 genes were cloned into the plasmid pSEC under the control of the nisin-inducible promoter, which can generate the recombinant plasmid pSEC-hyb5-lyb5. Then, the pSEC-hyb5-lyb5 was transformed into Lactococcus lactis NZ9000 by electroporation, yielding NZphi. Hyb5 and Lyb5 were successfully expressed under the induction of nisin and effectively induced the lysis of NZphi, resulting in rapid reduction of OD600 and leakage of abundant intracellular proteins. These results will facilitate the application of autolysis lactic acid bacteria in fermentation to improve the quality of products.

Keywords:

temperate bacteriophage lysis cassette holin lysin

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