High yield recombinant penicillin G amidase production and export into the growth medium using Bacillus megaterium

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[摘要] 28 November 2006,During the last years B. megaterium was continuously developed as production host for the secretion of proteins into the growth medium. Here, recombinant production and export of B. megaterium ATCC14945 Penicillin G amidase (PGA) which is used in the reverse synthesis of B-lactam antibiotics were systematically improved.

[关键词] penicillin Ggene

Background

28 November 2006,During the last years B. megaterium was continuously developed as production host for the secretion of proteins into the growth medium. Here, recombinant production and export of B. megaterium ATCC14945 Penicillin G amidase (PGA) which is used in the reverse synthesis of B -lactam antibiotics were systematically improved. Results

For this purpose the PGA leader peptide was replaced by the B. megaterium LipA counterpart. A production strain deficient in the extracellular protease NprM and in xylose utilization to prevent gene inducer deprivation was constructed and employed. A buffered mineral medium containing cachium ion and defined amino acid supplements for optimal PGA production was developed in microscale cultivations and scaled up to Conclusions The combination of genetic and medium optimization led to an overall 7 -

fold improvement of PGA production and export in B. megaterium. The exclusion of certain amino acids from the minimal medium led for the first time to higher volumetric PGA activities than obtained for complex medium cultivations.

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