

生物化学工程与技术

FTIR技术结合代谢物组学分析方法在菌株高通量筛选中的应用

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摘要 为了寻找菌株高通量筛选的新方法, 尝试运用代谢物组学的技术及其分析方法来筛选菌株。通过运用FTIR技术结合PCA、HCA, 很好地区分了处于不同发酵时间的利迪链霉菌AS 4.2501, 并找到了利迪链霉菌合成利迪链菌素时可能的生物标志物; 并尝试使用FTIR技术结合ANN较好地预测了具有不同利迪链菌素合成能力的利迪链霉菌的突变株。实验结果表明基于代谢物组分析的FTIR技术和化学计量学数据处理方法的结合, 有望用于菌株诱变后的高通量筛选。

关键词

[高通量筛选](#) [利迪链霉菌AS 4.2501](#) [生物标志物](#)

分类号

Application of FTIR and metabolomics analysis in high-throughput screening strains

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Abstract

For the sake of searching new methods of high-throughput screening of mutant strains, the strains were screened by applying the technology of metabolomics. Through using Fourier Transformation Infrared spectroscope (FTIR) accompanied with Principal Component Analysis (PCA) and Hierarchical Cluster Analysis (HCA), the experiment successfully distinguished *Streptomyces lydicus* AS 4.2501 strains at different times of fermentation, and found the possible biomarkers when *Streptomyces lydicus* AS 4.2501 synthesized streptolydigin. The experiment, which attempted to use FTIR accompanied with Artificial Neural Network (ANN) to forecast *Streptomyces lydicus* AS 4.2501 mutation strains with different capacities of streptolydigin biosynthesis also obtained satisfying result. The results suggested that the combination of FTIR of metabolomics analysis with the data analysis of stoichiometric methods have prospective future in high-throughput screening of mutant strains.

Key words

[high-throughput screening](#) [Streptomyces lydicus AS 4.2501](#) [biomarker](#)

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