



◇ 按期浏览

2010 2009
2008 2007
2006 2005

◇ 相关网站链接

[万方数据](#)

◇ 相关下载链接

[Acrobat Reader](#)
(PDF阅读器)

文章信息

[返回上一页检索结果](#)

【文章编号】 1004-1540(2010)02-0146-06

优化米曲霉固体发酵产果胶酶及产物酶学性质

刘明启¹, 刘光富¹, 戴贤君¹, 胡安雨²

(1.中国计量学院 生命科学学院; 浙江 杭州 310018; 2.上海师范大学 生命与环境科学学院; 上海 200235)

【摘要】 以麸皮为基质, 橘皮粉添加量、氮源、培养基初始含水量和发酵时间为因子, 采用响应面法的中心组合设计, 对影响米曲霉(*Aspergillus oryzae* JL14) 固体发酵产果胶酶的条件进行了优化. 结果表明, 橘皮粉、硫酸铵的最适添加量分别为13.2%和2.3%, 初始含水量为63.5%, 发酵时间为77.0 h, 米曲霉果胶酶产量最大预测值达316.4 U/g发酵产物, 实验验证值为310.7 U/g发酵产物, 是基础培养基酶产量的3.3倍. 该米曲霉果胶酶 (PG) 的最适温度为50 °C, T_m为55.9 °C, 其热稳定性较差; 最适pH为4.0, 属于嗜酸性果胶酶, 在pH 5.0~8.0范围内稳定性较好, 处理1 h后残余酶活均在80%以上. PG的K_m和V_{max}分别为7.06 mg/mL和62.5 μmol·1·min·mL⁻¹. PG能快速降低果胶溶液的黏度. 该研究为提高橘皮利用率和酶法生产高品质果胶低聚糖奠定基础.

【关键词】 果胶酶; 响应面法; 优化; 酶学性质; 橘皮

【中图分类号】 X **【文献标识码】** A

Optimization of solid state fermentation conditions for pectinase production by *Aspergillus oryzae* using response surface methodology and its enzymatic properties

LIU Ming-qi¹, LIU Guang-fu¹, DAI Xian-jun¹, HU An-yu²

(1.College of Life Sciences; China Jiliang University; Hangzhou 310018; China;

2.College of Life and Environment Sciences; Shanghai Normal University; Shanghai 200235; China)

Abstract: The conditions for pectinase (PG) production by a newly isolated *Aspergillus oryzae* JL14 strain in solid-state fermentation (SSF) on wheat bran was optimized by response surface methodology (RSM). Study results revealed that the maximum PG yield (316.4 U/g fermentation

product) was obtained at 13.2% orange peel powder and 2.3% (NH₄)₂SO₄ by employing wheat bran, 63.5% moisture content and 77.0-h fermentation, which was close to the predicted one (310.7 U/g), and was 3.3 times as high as that of the basic medium. The optimum temperature and T_m for PG were 50°C and 55.9°C, respectively, which showed low thermostability. The PG was an acidophilic enzyme with the optimum pH of 4.0. Over 80% of its activity was retained after treatment of the enzyme by preincubation over the pH 5.0-8.0 for 1 h at 25 °C. PG exhibited K_m and V_{max} values of 7.06 mg/mL and 62.5 μmol·min⁻¹·mL⁻¹, respectively. PG cleaved pectin randomly and caused a rapid decrease in viscosity. These data are the basis for the improvement of the level of utilization of orange peel and for the production of high-quality oligo-galacturonates.

Key words: pectinase; RSM; optimization; enzymatic properties; orange peel

【收稿日期】 2010-03-27

【作者简介】 刘明启（1979-），男，河南罗山人，博士，主要研究方向为酶工程与资源开发利用.

【发表于】 2010年第21卷第2期

文章下载:



阅读器下载:



此文章所在分类（点选某级分类可查看该分类中的文章列表）：

该文献在中图法分类中的位置:

└ 环境科学、安全科学

[返回上一页检索结果](#)

[学校首页](#) | [学报首页](#) | [学报简介](#) | [编委会章程](#) | [征稿启事](#) | [编委名单](#) | [最新目录](#) | [检索系统](#)

Copyright 2005 中国计量学院学报编辑部 中国计量学院网络中心