化工学报 2009 60 (6): 1529-1533 ISSN: 0438-1157 CN: 11-1946/TQ

生物化学工程与技术

产甘油假丝酵母反复分批发酵法生产甘油

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收稿日期 2008-12-30 修回日期 2009-3-9 网络版发布日期 2009-6-17 接受日期

摘要 研究了合成培养基和复合培养基中产甘油假丝酵母反复分批发酵法生产甘油。结果表明，当产甘油假丝酵母细胞在贫磷合成培养基、贫磷复合培养基和补充微量元素的贫磷复合培养基中分别回用13次、9次和14次时，甘油平均产量（或平均得率）的增量均超过15.0%，而甘油平均产率的增加达到37.0%以上。因此限制反复分批发酵培养基中磷含量有利于增强产甘油假丝酵母细胞合成甘油的能力。产甘油假丝酵母细胞在贫磷复合培养基中的回用次数少于贫磷合成培养基中的回用次数，其原因是贫磷合成培养基仅限制了磷源的用量，而贫磷复合培养基除限磷外，微量元素缺乏使菌体生长和甘油生产能力受到影响，回用次数减少。与传统分批发酵相比，产甘油假丝酵母反复分批发酵具有发酵周期短、不需反复培养种子、节省原料成本、形成副产物少以及节约能源动力消耗等优点，可以实现甘油高产量、高得率和高产率的相对统一，且易于放大到工业化生产水平。

关键词

产甘油假丝酵母 反复分批发酵法 甘油生产 限磷

分类号

Glycerol production by repeated batch fermentation of Candidaglycerinogenes

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Abstract

Glycerol production by repeated batch fermentation of *Candida glycerinogenes*was studied by using not only synthetic medium but also complex medium.The results showed that the increase rates of glycerol production, glycerol yield on initial glucose and glycerol productivity were beyond 15.0%, 15.0% and 37.0% when yeast cells are recycled 13 times in low phosphate synthetic medium, 9 times in low phosphate complex medium and 14 times in low phosphate complex medium with supplemented trace elements, respectively.The number of recycling in low phosphate complex medium was fewer than that in low phosphate synthetic medium.It is because low phosphate synthetic medium only limited phosphate concentration, while low phosphate complex medium limited both trace elements and phosphate.The shortage of trace elements solution influenced cell growth and glycerol synthesis, and reduced recycling number of yeast cells in low phosphate complex medium.The limitation of phosphate concentration in repeated batch fermentation medium was helpful to promoting the ability of glycerol synthesis of *C.glycerinogenes*.

Key words

Candida glycerinogenes repeated batch fermentation glycerol production phosphorus limitation

DOI:

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