利用懸浮與固定化菌株將甘油轉換為2,3-丁二醇之研究

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摘 要

2,3-丁二醇(2,3-BDO)是相當具有前途的化學物質，是一種生物質量為基材生產的二醇，可廣泛應用於食品工業及化妝品行業、抗凍劑以及燃料添加劑。本研究篩選出兩株能夠將甘油轉換成2,3-BDO菌株，分別為Klebsiella sp. Wu1和K. pneumoniae Wu2，並探討pH和碳、氮源的基質濃度，曝氣量及攪拌速率對兩菌株生產2,3-BDO之影響。當考慮到生產2,3-BDO的性能時，peptone是一種很好的氮源。結果顯示，在批次培養中，當Klebsiella sp. Wu1和K. pneumonia Wu2分別以甘油濃度為40和60 g/L時，2,3-BDO可達最高產量，分別為7.2和8.4 g/L。此外，本研究亦研究評估PVA+PU固定化菌體顆粒置於流體化床反應器中進行探討操作變數，例如HRT、甘油進料濃度、顆粒填充比對2,3-BDO生產的影響。固定化Klebsiella sp. Wu1和K. pneumonia Wu2利用流體化床反應器以連續饋料生產2,3-BDO，其最佳條件在HRT為24h，產量分別為16.35和17.12 g/L。

關鍵詞 : 聚胺脂、聚乙烯醇、肺炎克雷伯氏菌、克雷伯氏菌、固定化、流體化床反應器、甘油、2、3-丁二醇

目錄

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