

不同pH培養Bacillus megaterium 合成PHB之研究

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摘要

羥基烷酯(Polyhydroxyalkanoates, PHAs)為一性質與聚丙烯相似之生物可分解性塑膠材料，可藉由微生物於某種營養素缺乏的環境下累積而成，由於此類之聚合物可應用的範圍相當廣，因此被廣泛研究。本實驗以Bacillus megaterium YU-1為實驗菌株，於限制氮源的生長環境及不同pH (5.0、5.5、6.0及7.0)下進行批次發酵培養，探討pH對菌體量、PHB產量、營養源消耗及代謝酸的產量之影響。實驗結果顯示，於限氮及pH 5.5的條件下培養，生質量與PHB產量分別為5.03與1.23 g/L，PHB佔菌體生質量約24%，為最高，而pH 5.5之代謝酸主要以檸檬酸為主，於培養24 h時達最高，約397.8 mg/L。限磷研究方面，於各種pH (5.0、5.5、6.0及7.0)下進行批次發酵培養，探討pH對菌體量、PHB產量、營養源消耗及代謝酸的產量之影響。實驗結果顯示，於限磷及pH 6.0的條件下培養，菌體之生質量及PHB產量分別為7.18與5.69 g/L，PHB佔菌體生質量約79%，為最高，而pH 6.0之代謝酸主要以乙酸為主，於培養28 h時達最高，約3.1 g/L。實驗結果顯示，限磷及pH 6.0的培養比限氮培養有較佳之生質量及PHB產量，在限磷條件下，菌體分泌之有機酸以乙酸為主，而限氮條件下則以檸檬酸為主。

關鍵詞：聚羥基烷酯類；限氮；限磷

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