

限氮條件下培養菌株Burkholderia sp. Yu-4生合成PHBV

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摘要

在限氮條件下添加葡萄糖(第一碳源)與有機酸鹽類(丙酸鈉或戊酸鈉為第二碳源), 培養菌株Burkholderia sp. Yu-4, 生合成PHAs, 以一次一因子的方式進行搖瓶培養, 探討不同種類之氮源與碳源、有機酸鹽類添加時機及添加濃度, 對菌株Burkholderia sp. Yu-4生合成PHBV之影響及最適化條件之批次發酵培養。以硫酸銨為氮源及不同種類之碳源(以葡萄糖之碳源為基準)培養, 經一次一因子搖瓶實驗結果得知, 最佳碳源為葡萄糖, 可得菌體生質量4.53 g/L, HB產量為1.96 g/L。在以葡萄糖為碳源, 並加入不同氮源(硫酸銨之氮源為基準), 培養Burkholderia sp. Yu-4, 其中最佳氮源為硫酸銨, 可得生質量4.90 g/L, HB產量為1.63 g/L。添加有機酸鹽類(丙酸鈉或戊酸鈉)為第二碳源之最佳添加時機, 以6 h添加丙酸鈉可得最佳菌體生質量、PHBV生合成量, 分別為6.02、2.38 g/L (HB、HV為2.33、0.05 g/L); 在6 h添加戊酸鈉菌體生質量、PHBV之生合成量分別為3.95、1.76 g/L (HB、HV為1.52、0.24 g/L)。添加不同濃度之有機酸鹽類之實驗結果中, 丙酸鈉之添加量以1 g/L為最佳, 其菌體生質量為4.95 g/L, PHBV為2.09 g/L (HB、HV分別為1.95、0.14 g/L); 戊酸鈉添加量以4 g/L為最佳之實驗結果, 其菌體生質量、PHBV生合成量為4.93、1.98 g/L (HB、HV生合成量1.57、0.41 g/L)。最適化條件的批次發酵槽培養中, 在未添加有機酸鹽類作為第二碳源實驗結果中PHB生合成產量可達3.95 g/L, 菌體生質量為6.47 g/L。

關鍵詞: 丙酸鈉、戊酸鈉

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