以 Chitinibacter tainanensis 生產 N-乙醯葡萄胺之研究

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摘 要

N-乙醯葡萄糖胺具有治療關節炎、小兒腸道發炎及促進皮膚保濕等生理功效，應用價值相當高，在食品加工與醫學方面有廣泛研究與應用。目前多種的N-乙醯葡萄糖胺製備方法各有其優缺點。本研究以兩階段方式發酵培養菌株Chitinibacter tainanensis生產。第一階段：改變培養基中葡萄糖濃度，以提高菌體生質量；第二階段：調控發酵培養基之pH值與幾丁質濃度，以增加N-乙醯葡萄糖胺產量。 Chitinibacter tainanensis菌株以不同濃度葡萄糖於搖瓶培養，其中以含0.3%葡萄糖之培養基的生質量最高。此菌株培養於含有0.3%葡萄糖BH培養基，培養8 h，轉換至含有2% 幾丁質濃度之BH培養基，於培養96 h時具有最高還原醣量，為14.7 g/L；幾丁質?活性於培養至72 h時最高，為725.3 U/L；N-乙醯葡萄糖胺產量於培養至144 h達最高，為15.8 g/L，幾丁質轉化率為79%。 以不同葡萄糖濃度於發酵槽培養菌株Chitinibacter tainanensis，結果以含2.5%葡萄糖之菌體生質量最高，因此在第一階段之培養，均以2.5 % 葡萄糖為其碳源。 於發酵槽中，以兩階段調控pH，培養菌株Chitinibacter tainanensis，第一階段pH為 7，以BH-1培養基含2.5%葡萄糖培養Chitinibacter tainanensis，菌體生質量於24 h時為2.42 g/L。培養至24 h，轉換至含有2%幾丁質的培養基，進行第二階段發酵培養，還原醣於培養至96 h時達最高，為16.1 g/L，菌株生質量於轉換培養基後，培養至96 h時，生質量達最高，為1.99 g/L。幾丁質?活性於培養至96 h時達最高，為800.3 U/L。Chitinibacter tainanensis分解幾丁質，於72 h時可生成N-乙醯葡萄糖胺15.6 g/L，幾丁質轉化率為77.8%。 菌株Chitinibacter tainanensis以兩階段培養，於第二階段不調控pH值，於培養24 h後，轉換為第二階段培養(不調控pH值)，轉換之後，培養基之pH培養至48 h時，降至5.31，幾丁質?活性於培養72 h時達最高，為710 U/L，還原醣於96 h時最高，為16.7 g/L。第二階段發酵培養生成的N-乙醯葡萄糖胺，於培養120 h時達最高，為16.1 g/L，幾丁質轉化率為80.1%。 提高幾丁質濃度為4%，以兩階段於發酵槽中培養Chitinibacter tainanensis菌株，於第二階段(不調控pH)培養，其還原醣於120 h時達最高，為33.7 g/L，菌株生質量於轉換培養基後，於120 h生質量達最高，為2.47 g/L。幾丁質?活性於培養72 h時達最高，為650.0 U/L。第二階段培養之N-乙醯葡萄糖胺生成量，於96 h時達最高，為31.2 g/L，幾丁質轉化率為78.0%。

關鍵詞 : N-乙醯葡萄糖胺 ; Chitinibacter tainanensis ; 兩階段培養

目錄

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