

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. pneumoniae 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. pneumoniae 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

封面內頁 簽名頁 中文摘要iii 英文摘要iv 誌謝v 目錄vii 圖目錄xiii 表目錄xix 1.緒論1 1.1前言1 1.2研究動機及目的4 2.文獻回顧6 2.1甘油簡介6 2.1.1甘油轉化2,3-BDO代謝途徑8 2.2 2,3-BDO簡介9 2.2.1 2,3-BDO之特性與應用9 2.2.2生物方法生產2,3-BDO10 2.2.3生產2,3-BDO之菌株介紹11 2.3 培養基探討17 2.3.1基質濃度17 2.3.2外加有機酸濃度18 2.4環境因子對微生物生產2,3-BDO之影響19 2.4.1溶氧19 2.4.2 pH之影響20 2.4.3溫度的影響21 2.5 固定化技術簡介23 2.5.1固定化細胞技術23 3. 材料與方法26 3.1實驗材料26 3.1.1實驗藥品26 3.1.2儀器設備29 3.2懸浮污泥馴養30 3.2.1馴養可生產2,3-BDO之培養基30 3.2.2培養條件30 3.2.3菌株篩選31 3.2.4純菌生產2,3-BDO之培養基32 3.3菌株之篩選與DNA鑑定33 3.4實驗方法39 3.4.1 環境因子及培養基組成對2,3-BDO生產菌株生長及生產之影響39 3.4.1.1pH值之影響39 3.4.1.2氮源種類之影響39 3.4.1.3氮源濃度之影響40 3.4.1.4甘油為主要碳源,額外添加不同碳源之影響40 3.4.1.5甘油濃度之影響41 3.4.1.6振盪速率及曝氣速率之影響41 3.4.1.7溫度之影響42 3.4.2微生物發酵液之分析方法42 3.4.2.1總醣分析42 3.4.2.2以氣相層析儀(GC)分析2,3-BDO及副產物44 3.4.3固定化菌株之製備45 3.4.3.1菌體之大量培養45 3.4.3.2菌體量之量測46 3.4.3.3固定化菌株之製備46 3.4.3.4 PU+PVA顆粒製備方法和物性測定47 3.4.4固定化生化反應器設計與操作50 3.4.5物質結構之分析53 3.4.5.1掃描式電子顯微鏡(Scanning Electron Microscopy, SEM)53 4. 結果與討論54 4.1生產2,3-BDO之活性污泥馴養54 4.1.1探討額外添加醋酸對9種污泥在不同培養條件下2,3-BDO之產量比較55 4.2經由活性污泥篩選出生產2,3-BDO之菌株並進行鑑定59 4.3 PH對2,3-BDO生產之影響61 4.4探討不同氮源種類對2,3-BDO生產之影響68 4.4.1氮源對*Klebsiella sp. Wu1*生產2,3-BDO之影響68 4.4.2氮源對*K. pneumoniae Wu2*生產2,3-BDO之影響68 4.5氮源濃度對2,3-BDO生產之影響72 4.5.1 Peptone、urea及(NH₄)₂SO₄對*Klebsiella sp. Wu1*菌株生產2,3-BDO之影響72 4.5.2 Peptone、urea及(NH₄)₂SO₄對*K. pneumoniae Wu2*菌株生產2,3-BDO之影響72 4.6探討以甘油為主要碳源,額外添加不同碳源條件對*Klebsiella sp. Wu1*和*K. pneumoniae Wu2*菌株生產2,3-BDO之影響80 4.6.1額外添加不同碳源對*Klebsiella sp. Wu1*菌株生產2,3-BDO之影響80 4.6.2額外添加不同碳源對*K. pneumoniae Wu2*菌株生產2,3-BDO之影響81 4.7甘油濃度對篩選菌株生產2,3-BDO之影響87 4.7.1固定乳糖濃度下,甘油濃度對*Klebsiella sp. Wu1*生產2,3-BDO之影響 87 4.7.2 固定乳糖濃度下,甘油濃度對*K. pneumoniae Wu2*生產2,3-BDO之影響88 4.8 振盪速率及曝氣速率對篩選菌株生產2,3-BDO之影響94 4.8.1振盪速率及曝氣速率對*Klebsiella sp. Wu1*生產2,3-BDO之影響94 4.8.2振盪速率及曝氣速率對*K. pneumoniae Wu2*生產2,3-BDO之影響95 4.9 溫度對篩選菌株生長及生產2,3-BDO之影響98 4.10添加丙酮酸對*Klebsiella sp. Wu1* 及*K. pneumoniae Wu2*兩菌株有無提升2,3-BDO產量之影響100 4.11選擇最佳固定化製備條件固定化*Klebsiella sp. Wu1*與*K. pneumoniae Wu2*菌株於生產2,3-BDO之能力影響104 4.11.1探討不同PU濃度與Alginate 對固定化之可行性104 4.11.2不同CaCl₂對固定化及懸浮*Klebsiella sp. Wu1*與*K. pneumoniae Wu2*菌株之影響111 4.11.3 利用固定化*Klebsiella sp. Wu1*與*K. pneumoniae Wu2*以PU+PVA與Alginate+PVA作為固定化方法可行性之研究117 4.11.4 添加不同丙酮酸濃度對固定化與懸浮*Klebsiella sp. Wu1*與*K. pneumoniae Wu2*菌株生產2,3-BDO之影響 124 4.11.5振盪速率,曝氣速率及靜置對固定化*Klebsiella sp. Wu1*與固定化*K. pneumoniae Wu2*兩菌株生產2,3-BDO之影響130 4.11.6 pH對固定化*Klebsiella sp. Wu1*和*K. pneumoniae Wu2*菌株生產2,3-BDO之影響134 4.11.7溫度對固定化*Klebsiella sp. Wu1*菌株與*K. pneumoniae Wu2*菌株之影響144 4.11.8探討不同介面活性劑有無提高*Klebsiella sp. Wu1*與*K. pneumoniae Wu2*菌株生產2,3-BDO之影響150 4.12以PU+PVA作為固定化單體在單一菌株下進行流體化床反應器之連續生產測試156 4.12.1不同水力滯留時間與顆粒填充比生產2,3-BDO之影響156 4.12.2 初始Glycerol濃度對固定化*Klebsiella sp. Wu1*與*K. pneumoniae Wu2* 菌株在反應器生產2,3-BDO

之影響163 4.12.3 探討固定化*Klebsiella sp. Wu1*及*K. pneumoniae Wu2*以流體化床連續饋料並以不同曝氣量對2,3-BDO之影響167 5. 結論171 參考文獻173 圖目錄 圖1-1本研究架構示意圖3 圖2-1生物發酵法甘油代謝途徑8 圖3-1生產2,3-BDO之微生物篩選流程圖32 圖3-2葡萄糖濃度的標準曲線43 圖3-3各種代謝產物之GC標準圖譜44 圖3-4產物及副產物之標準曲線45 圖3-5PU+PVA固定化流程47 圖3-6測量固定化顆粒強度之實驗裝置49 圖3-7反應器運行過程示意圖52 圖4-1以不同來源的工業廢水，農業污水和農業污泥經馴養後2,3-BDO、1,3-PDO與甘油消耗量培養基與培養條件56 圖4-2 以不同來源的工業廢水，農業廢水探討添加醋酸對2,3-BDO產量之影響58 圖4-3 *Klebsiella sp. Wu1*之親緣圖60 圖4-4 *Klebsiella pneumoniae Wu2*之親緣圖60 圖4-5在不同pH值條件下*Klebsiella sp. Wu1*之生長曲線64 圖4-6在不同pH值條件下*K. pneumoniae Wu2*之生長曲線65 圖4-7不同pH對*Klebsiella sp. Wu1*生產2,3-BDO產量及產力之影響66 圖4-8不同pH對*K. pneumoniae Wu2*生產2,3-BDO產量及產力之影響67 圖4-9不同氮源對*Klebsiella sp. Wu1*生產2,3-BDO產量之影響70 圖4-10不同氮源對*K. pneumoniae Wu2*生產2,3-BDO產量之影響71 圖4-11不同peptone濃度對*Klebsiella sp. Wu1*生產2,3-BDO產量和產力之影響74 圖4-12不同urea濃度對*Klebsiella sp. Wu1*生產2,3-BDO產量和產力之影響75 圖4-13不同(NH₄)₂SO₄濃度對*Klebsiella sp. Wu1*生產2,3-BDO產量之影響76 圖4-14 不同peptone濃度對*K. pneumoniae Wu2*生產2,3-BDO產量和產力之影響77 圖4-15不同urea濃度對*K. pneumoniae Wu2*生產2,3-BDO產量和產力之影響78 圖4-16不同(NH₄)₂SO₄濃度對*K. pneumoniae Wu2*生產2,3-BDO產量之影響79 圖4-17在不同碳源對*Klebsiella sp. Wu1*之生長曲線與碳源的消耗率83 圖4-18有/無添加甘油，額外添加不同碳源對*Klebsiella sp. Wu1* 生產2,3-BDO之影響84 圖4-19在不同碳源對*K. pneumoniae Wu2*之生長曲線與碳源的消耗率85 圖4-20有/無添加甘油，額外添加不同碳源對*K. pneumoniae Wu2*生產2,3-BDO之影響86 圖4-21在不同甘油濃度下*Klebsiella sp. Wu1*添加乳糖及未添加乳糖之生長及甘油的消耗比較90 圖4-22有/無添加乳糖在添加不同甘油濃度對*Klebsiella sp. Wu1*生產2,3-BDO之影響91 圖4-23在不同甘油濃度下*K. pneumoniae Wu2*添加乳糖及未添加乳糖之生長及甘油的消耗比較92 圖4-24有/無添加乳糖在不同甘油濃度對*K. pneumoniae Wu2*生產2,3-BDO之影響93 圖4-25在曝氣條件與攪拌速率下*Klebsiella sp. Wu1*對2,3-BDO產量之影響96 圖4-26在曝氣條件與攪拌速率下*K. pneumoniae Wu2*對2,3-BDO產量之影響97 圖4-27不同溫度對篩選的菌株生產2,3-BDO之影響99 圖4-28 *Klebsiella sp. Wu1*和*K. pneumoniae Wu2*添加丙酮酸之生長曲線102 圖4-29 添加不同丙酮酸對*Klebsiella sp. Wu1*和*K. pneumoniae Wu2*培養72小時生產2,3-BDO及副產物之影響103 圖4-30試驗不同Alginate和PU比例濃度形成固定化*Klebsiella sp. Wu1*和*K. pneumoniae Wu2*培養五天後之2,3-BDO及副產物之影響106 圖4-31不同氯化鈣濃度對固定化*Klebsiella sp. Wu1*之生長情形113 圖4-32不同氯化鈣濃度對固定化*K. pneumoniae Wu2*之生長情形114 圖4-33 不同氯化鈣濃度對*Klebsiella sp. Wu1*培養四天後 2,3-BDO及副產物之影響115 圖4-34不同氯化鈣濃度對*K. pneumoniae Wu2*培養四天後2,3-BDO及副產物之影響116 圖4-35不同固定化條件對*Klebsiella sp. Wu1*培養四天生產2,3-BDO及副產物之影響120 圖4-36不同固定化條件對*K. pneumoniae Wu2*培養四天生產2,3-BDO及副產物之影響121 圖4-37 不同丙酮酸濃度對固定化與懸浮*Klebsiella sp. Wu1*生長情形126 圖4-38不同丙酮酸濃度對固定化與懸浮*K. pneumoniae Wu2*菌株生長情形 127 圖4-39不同丙酮酸濃度對固定化與懸浮之*Klebsiella sp. Wu1*菌株培養三天後生產2,3-BDO及副產物之影響128 圖4-40不同丙酮酸濃度對固定化與懸浮之*K. pneumoniae Wu2* 菌株培養三天生產2,3-BDO及副產物之影響129 圖4-41在曝氣條件與攪拌速率下*Klebsiella sp. Wu1*和*K. pneumoniae Wu2*生長情形132 圖4-42在曝氣條件與攪拌速率下*Klebsiella sp. Wu1*和*K. pneumoniae Wu2*對2,3-BDO與其他副產物之影響133 圖4-43利用酸鹼液調整pH對固定化與懸浮*Klebsiella sp. Wu1*菌株之生長情形136 圖4-44 利用磷酸緩衝液調整pH對固定化與懸浮*Klebsiella sp. Wu1*菌株之生長情形137 圖4-45利用酸鹼液調整pH對固定化與懸浮*K. pneumoniae Wu2*菌株之生長情形138 圖4-46利用磷酸緩衝液調整pH對固定化與懸浮*K. pneumoniae Wu2*菌株之生長情形139 圖4-47利用酸鹼液調整pH對*Klebsiella sp. Wu1*生產2,3-BDO產量及產力之影響140 圖4-48 利用磷酸緩衝液調整pH對*Klebsiella sp. Wu1*生產2,3-BDO產量及產力之影響141 圖4-49 利用酸鹼液調整pH對*K. pneumoniae Wu2*生產2,3-BDO產量及產力之影響142 圖4-50 利用磷酸緩衝液調整pH對*K. pneumoniae Wu2*生產2,3-BDO產量及產力之影響143 圖4-51不同溫度對固定化與懸浮*Klebsiella sp. Wu1*生長情形146 圖4-52 不同溫度對固定化與懸浮*K. pneumoniae Wu2*之生長情形147 圖4-53不同溫度對固定化與懸浮*Klebsiella sp. Wu1*生長2,3-BDO及副產物之影響 148 圖4-54不同溫度對固定化與懸浮*K. pneumoniae Wu2*生長2,3-BDO及副產物之影響149 圖4-55 額外添加不同界面活性劑*Klebsiella sp. Wu1*菌株之生長情形152 圖4-56 添加不同界面活性劑*K. pneumoniae Wu2*菌株之生長情形153 圖4-57添加不同界面活性劑*Klebsiella sp. Wu1*生產2,3-BDO及副產物之影響154 圖4-58添加不同界面活性劑*K. pneumoniae Wu2*生產2,3-BDO及副產物之影響155 圖4-59不同顆粒填充比與HRT對固定化 *Klebsiella sp. Wu1*在流體化床連續饋料之生長曲線158 圖4-60不同顆粒填充比與HRT對固定化*K. pneumoniae Wu2*在流體化床連續饋料之生長曲線159 圖4-61不同顆粒填充比與HRT對固定化*Klebsiella sp. Wu1*在流體化床連續饋料對2,3-BDO產量之影響160 圖4-62不同顆粒填充比與HRT對固定化*K. pneumoniae Wu2*在流體化床連續饋料對2,3-BDO產量之影響161 圖4-63初始甘油濃度對固定化*Klebsiella sp. Wu1*在流體化床連續饋料及批次饋料對2,3-BDO產量之影響165 圖4-64初始甘油濃度對固定化*K. pneumoniae Wu2*在流體化床 連續饋料及批次饋料對2,3-BDO產量之影響166 圖4-65固定化*Klebsiella sp. Wu1*在流體化床連續饋料中不同曝氣量對2,3-BDO產量之影響169 圖4-66固定化*K. pneumoniae Wu2*在流體化床連續饋料中不同曝氣量對2,3-BDO產量之影響170 表目錄 表2-1各種微生物利用碳源轉換2,3-BDO之研究文獻13 表3-1污泥培養基組成30 表3-2 *Klebsiella sp. Wu1*培養基組成33 表3-3 *K. pneumoniae Wu2*培養基組成 33 表3-4本研究使用的PCR引子36 表3-5 PCR配方的組成36 表3-6 PCR的操作條件36 表3-7 SDS-PAGE組成38 表3-8 5X TBE (Tris-Borate-EDTA)緩衝液38 表3-9 GC-FID 型號及操作條件44 表4-1 *Klebsiella sp. Wu1*以不同PU比例濃度顆粒凝膠測試107 表4-2 *K. pneumoniae Wu2*.以不同PU比例濃度顆粒凝膠測試108 表4-3利用SEM觀察不同PU比例濃度固定化*Klebsiella sp.*

Wu1之顆粒變化109 表4-4利用SEM觀察不同PU比例濃度固定化*K. pneumoniae* Wu 2之顆粒變化110 表4-5不同固定化製備方法對固定化*Klebsiella sp.* Wu1與*K. pneumoniae* Wu2之影響122 表4-6利用SEM 觀察固定化 *Klebsiella sp.* Wu1和*K. pneumoniae* Wu2之顆粒變化123 表4-7在不同顆粒填充比及水力滯留時間對固定化菌株在流體化床連續反應器之動力學參數162 表5-1 *Klebsiella sp.* Wu1 最佳培養基組成172 表5-2 *K. pneumoniae* Wu2 最佳培養基組成172

參考文獻

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