

บรรณานุกรม

ธงชัย วงศ์สุวรรณ. (2550). การผลิตพอลีไอก្រอกซีอัตคานิโนต โดยใช้กรดการ์บอฟซิลิกที่ได้จาก การหมักเส้นใยปาล์ม. วิทยานิพนธ์ปริญญาวิทยาศาสตร์มหาบัณฑิต, มหาวิทยาลัยสงขลานครินทร์.

ธีระ สุตตะบุตร. (2548). แผนกlotบุทธ์การวิจัยด้านเกษตรและอุตสาหกรรมการเกษตร ตามวาระการ วิจัยแห่งชาติในภาวะวิกฤตเพื่อพื้นฟูชาติ. วันที่ค้นข้อมูล 26 มกราคม 2554, เข้าถึง ได้จาก www.riclib.nrct.go.th/info/plansummary.pdf

ปิยวรรรณ บุญมาโภ และพิมพ์ชนก นครราช . (2548) . การผลิต *Poly-β-hydroxybutyrate (PHB)* โดย *Alcaligenes eutrophus NCIMB 11599* โดยใช้ไอก្រ ไอลเซทของแบ่งมันสำปะหลัง. วันที่ค้นข้อมูล 26 มกราคม 2552, เข้าถึง ได้จาก www.scisoc.or.th/stt/32/sec_b/paper/stt32_B4_B0099.pdf

พกานตี นารอง. (2542). พลascikที่ย่อยสลายได้. วิทยกรรมสาร ม.ช. , 4, 45-53.

เศรษฐี ชั่วสาร. (2551). เอกสารคำสอนวิศวกรรมกระบวนการชีวภาพ. ชลบุรี: ภาควิชา ชีววิทยา, คณะวิทยาศาสตร์, มหาวิทยาลัยบูรพา.

ศิริรัตน์ ศิริพรวิชาล. (2551). PHA: พลascikชีวภาพจากแบคทีเรีย. สั่งสมรนเทศโนโลยี, 202, 66-72. สุทธิเกตตี้ หัดพิทักษ์กุล. (2553). พลascikชีวภาพไทย ตอนที่ 2 แผนที่นำทางสู่อุตสาหกรรมแห่ง อนาคต. วารสารส่งเสริมการลงทุน, 21(4), 27-34.

สิรนุช ลามศรีจันทร์. (2540). การกลยุทธ์ของพืช (พิมพ์ครั้งที่ 2). กรุงเทพฯ.

สาโรจน์ ศิริศันสนียกุล. (2547). เทคโนโลยีชีวภาพอาหาร การหมัก และสิ่งแวดล้อม. กรุงเทพฯ: ภาควิชาเทคโนโลยีชีวภาพ, มหาวิทยาลัยเกษตรศาสตร์.

หมายเหตุ มหาทรพย์ไพบูลย์ (2542). ผลงานศาสตร์การผลิตพอลีบีต้าไอก្រอกซีบิวทิรเทคโนโลยี *Alcaligenes eutrophus DSM 545*. วิทยานิพนธ์ปริญญาวิทยาศาสตร์มหาบัณฑิต, สาขา เทคโนโลยีการอาหาร, มหาวิทยาลัยเกษตรศาสตร์.

Aamer, A. S., Fariha H., Abdul, H., & Safia, A. (2008). Biological degradation of plastics: A comprehensive review. *Biotechnology Advances*, 26, 246-265.

Anderson, A.J., & Wynn, J.P. (1995). Microbial polyhydroxyalkanoates, polysaccharides and lipids. In Ratledge, C., & Kristiansen, B. (Eds.), *Basic Biotechnology* (2nd ed.). (pp. 325-333). Cambridge: Cambridge University Press.

- Arun, A., Murrugappan, R.M., David, R. A. D., Veeramanikandan, V., & Shanmuga, B. (2006). Utilization of various industrial wastes for the production of poly- β -hydroxy butyrate (PHB) by *Alcaligenes eutrophus*. *African Journal of Biotechnology*, 5, 1524-1527.
- Burdon, K. L. (1946). Fatty material in bacteria and fungi revealed by staining dried, fixed slide preparations. *Journal of Bacteriology*, 52, 665-678.
- Braunegg, G., Sonnleimer, B., & Lafferty, R.M. (1978). A rapid gas chromatographic method for the determination of Poly- β -hydroxybutyric acid in microbial biomass. *European Journal Applied Microbial Biotechnology*, 6, 29-37.
- Chaijamrus, S., & Uduay, N. (2008). Production and characterization of polyhydroxybutyrate from molasses and corn steep liquor produced by *Bacillus megaterium* ATCC6748. In *Agricultural Engineering International, Proceeding* (pp.1-12). Naresuan University.
- Chen, G. Q., Zhang, G., Park, S. J., & Lee, S. Y. (2001). Industrial scale production of poly (3-hydroxybutyrate-co-3-hydroxyhexanoate). *Applied Microbial Biotechnology*, 57, 50-55.
- Chien, C. C., Chen, C. C., Choi, M. H., Kung, S. S., & Wei, Y. H. (2007). Production of poly- β -hydroxybutyrate (PHB) by *Vibrio* spp. isolated from marine environment. *Journal of Biotechnology*, 132, 259-263.
- Choi, J., & Lee, S. Y. (1997). Process analysis and economic evaluation for Poly (3-hydroxybutyrate) production by fermentation. *Bioprocess and Biosystems Engineering*, 17, 335-342.
- Choi, J., & Lec, S. Y. (1999). Factors affecting the economics of polyhydroxyalkanoate production by bacterial fermentation. *Applied Microbial Biotechnology*, 51, 13-21.
- Chomchai,S., & Chongchroen, R. (2010). The production of polyhydroxybutyrate from a newly yeast isolate, strain I-14. In *The second Thai-Japan Bioplastics and Biobased Materials Symposium (AIST-NIA Joint Symposium)* (pp. 14). Thailand.
- Divyashree, M.S., & Shamala, T.R. (2009). Effect of gamma irradiation on cell lysis and polyhydroxyalkanoate produced by *Bacillus flexus*. *Radiation Physics and Chemistry*, 78, 147-152.

- Doi, Y. (1990). *Microbialpolyester*. New York: VCH.
- Dong, Z., & Sun, X. (2000) A new method of recovering polyhydroxyalkanoate from *Azotobacter chroococcum*. *Chinese Science Bulletin*, 45, 252-256.
- Evans, J.D., & Sikdar, S.K. (1990). Biodegradable plastic; An idea whose time has come?. *Chem technology*, 38-42.
- Evandri, M.G., Battinelli, L., Daniele, C., Mastrangelo, S., Bolle, P., & Mazzanti, G. (2005). The antimutagenic activity of *Lavandula angustifolia* (lavender) essential oil in the bacterial reverse mutation assay. *Food and Chemical Toxicology*, 43, 1381–1387.
- Fatemeh, T., & Ebrahim, V. F. (2002). Biosynthesis of Poly- β -hydroxybutyrate as a biodegradable polymer. *Iranian polymer journal*, 12, 37-42.
- Frederick, A. B., & Fred, F. K. (1985). Formation and persistence of arylamine DNA adducts in vivo. *Environmental Health Perspectives*, 62, 19-30.
- Ganzeveld, K.J., Hagen, A.V., Agteren, M.H.V., Koning, W.D., & UiterKamp, A.J.M.S. (1999) Upgrading of organic waste: production of the copolymer poly-3-hydroxybutyrate-co-valerate by *Ralstonia eutrophus* with organic waste as sole carbon source. *Journal of Cleaner Production*, 7,413-419.
- Gato, W.E., & Means, J.C. (2011). Pancreatic gene expression altered following dietary exposure to 2-Aminoanthracene: links to diabetogenic activity. *Journal of Pharmacology and Toxicology*, 234-248.
- Grothe, E., Young, M. M., & Chisti, Y. (1999) . Fermentation optimization for the production of poly (β -hydroxybutyric acid) microbial thermoplastic. *Enzyme and Microbial Technology*, 25, 132-141.
- Guocheng, D., Jian, C., Jian, Y., & Shiysi, L. (2001). Continuous production of poly-3-hydroxybutyrate by *Ralstonia eutrophus* in a two-stage culture system. *Journal of Biotechnology*, 88, 59-65.
- Hikmet, K., Belma, A., Zehra, N. Y., Nazime, M., & Yavuz, B. (2003) Production of poly- β -hydroxybutyrate (PHB) and differentiation of putative *Bacillus* mutant strains by SDS-PAGE of total cell protein. *African Journal of Biotechnology*, 2 (6), 147-149.
- Holmes, P. A. (1985). Applications of PHB - A microbially produced biodegradable thermoplastic. *Physics in Technology*, 16, 32-36.

- Indu, C.N., Pradeep, S., Ajayan, M.S., Jayachandran, K., & Shashidhar, S. (2009). Accumulation of intracellular polyhydroxybutyrate in *Alcaligenes* sp. d2 under phenol stress. *Applied Biochemistry Biotechnology, 159*, 545-552.
- Jacquel, N., Chi, W.L., Yu, H.W., Ho, S.W., & Shaw, S.W. (2008). Isolation and purification of bacterial poly(3-hydroxyalkanoates). *Biochemical Engineering Journal, 39*, 15-27.
- Jia, Y., Yuan, W., Wodzinska, J., Park, C., Sinskey, A. J., & Stubbe, J. (2001). Mechanistic studies on class I Polyhydroxybutyrate (PHB) synthase from *Ralstonia eutropha*: Class I and III synthases share a similar catalytic mechanism. *Biochemistry, 40*, 1011-1019.
- Jogdand, S.N. (2004). *Welcome to the Eco-Friendly Plastic* (online). Retrieved December 25, 2010, from <http://www.biotechsupportindia.com/jognsn/.html>
- Kemavongse, K., Prasertsan, P., Upaichit, A., & Methacanon, P. (2007). Effect of co-substrate on production of poly- β - hydroxybutyrate (PHB) and copolymer PHBV from newly identified mutant *Rhodobacter sphaeroides* U7 cultivated under aerobic-dark condition. *Songklanakarin Journal of Science and Technology, 29*, 1101-1113.
- Khanafari, A., Akhavan, S. A., & Mogharab, M. (2006) . Production and recovery of poly- β -hydroxybutyrate from whey degradation by *Azotobacter*. *Environment Health Science Engineering, 3*, 193-198.
- Khanna, S., & Srivastava, A. K. (2005). Statistical media optimization studies for growth and PHB production by *Ralstonia eutrophus* . *Process Biochemistry, 40*, 2173-2182.
- Khanna, S., & Srivastava, A. K. (2006). Optimization of nutrient feed concentration and addition time for production of poly (β -hydroxybutyrate). *Enzyme and Microbial Technology, 39*, 1145-1151.
- Kim, B. S., Lee, S. Y., Chang, Y.K., & Woo, S. I. (1993). Production of poly (3-hydroxybutyric acid) by fed- batch culture of *Alcaligenes eutrophus* with glucose concentration control. *Biotechnology and Bioengineering, 48*, 892-898.
- Kim, B.S., & Chang, H.N. (1998). Production of poly (3-hydroxybutyrate) from starch by *Azotobacter chroococcum*. *Biotechnology Letters, 20*, 109-112.

- Kumar, M.S., Mudliar, S.N., Reddy, K.M., & Chakrabarti, T. (2004). Production of biodegradable plastics from activated sludge generated from a food processing industrial wastewater treatment plant. *Bioresource Technology*, 95, 327-330.
- Leda, R. C., David, A. M., & Denise, M.G. F.(2009) Production of polyhydroxyalkanoates (PHAs) from waste materials and by-products by submerged and solid-state fermentation. *Bioresource Technology*, 100, 5996-6009.
- Lec, S. Y. (1996). Bacterial polyhydroxyalkanoates. *Biotechnology and Bioengineering*, 49, 1-14.
- Lucero, J.M., García, B., Sandoval, A., Naharro, G., & Olivera, E.R. (2003). Bioplastics from microorganisms. *Current Opinion Microbiology*, 6(3), 251-260.
- Luli, G.W., & Strohl, W.R. (1990). Comparison of Growth, Acetate Production and acetate inhibition of *Escherichia coli* strains in batch and Fed-Batch fermentations. *Applied and Environmental Microbiology*, 56, 1004-1011 .
- Mercan, N., Aslim, B., Yuksekdag, Z.N., & Beyatli, Y. (2002). Production of poly- β -Hydroxybutyrate (PHB) by some Rhizobium bacteria. *Turkish Journal of Biology*, 26, 215–219.
- Miller, G. L. (1959). Use of dinitrosalicylic acid reagent for determination of reducing sugar. *Analytical Chemistry*, 31(3), 426-428.
- Mona, K.G., Azza, E. S., & Sanaa, H.O. (2001). Production of PHB by a *Bacillus megaterium* strain using sugarcane molasses and corn steep liquor as sole carbon and nitrogen source. *Microbiological Research*, 156, 201-207.
- Nath, A., Dexit, M., Bandiya, A., Chavda, S., & Desai, A. J. (2008). Enhance PHB production and scale up studies using cheese whey in fed batch culture of *Methylobacterium* sp. ZP24. *Bioresource Technology*, 99, 5749-5755.
- Nisha, V. R., Sudheer, K. S., Carlos, R. S., & Ashok, P.(2009 a). Polyhydroxybutyrate production using agro-industrial residue as substrate by *Bacillus sphaericus* NCIM 5149. *Brazilian Archives of Biology and Technology*, 17-23.

- Nisha, V. R., Sudheer, K. S., Carlos, R. S., & Ashok, P.(2009 b). A statistical approach for optimization of polyhydroxybutyrate production by *Bacillus sphaericus* NCIM 5149 under submerged fermentation using central compostion design. *Applied Biochemistry Biotechnology, 162*, 996-1007.
- Omar, S., Rayes, A., Eqaab, A., Voß, I., & Steinbüchel, A. (2001). Optimization of cell growth and poly (3-hydroxybutyrate) accumulation on date syrup by a *Bacillus megaterium* strain. *Biotechnology Letters, 23*, 1119-1123.
- Ojumu, T.V., Yu, J., & Solomon, B.O. (2004).Production of Polyhydroxyalkanoates, a bacterial biodegradable polymer. *African Journal of Biotechnology, 3*, 18-24.
- Palleroni, N. J., & Palleroni, A. V. (1978). *Alcaligenes latus* a New species of hydrogen-utilizing bacteria. *International journal of systematic, 416*-424.
- Pandey, A., Soccol, C.R., Nigam, P., Soccol, V.T., Vanderberghe, L.P.S., & Mohan, R. (2000). Biotechnology potential of agro-industrail residues ll cassava bagasse. *Biotechnology and Engineering, 74*, 81-87.
- Plabo, I., Nikel, Alejandra, de A., Evelia, C. M., Miguel, A. G., & Pettinari., M. J. (2006). New recombrinant *Escherichia coli* strain tailored for the production of poly (3-hydrxybutyrate) from agroindustrial by-products. *Applied and Enviromental Microbiology, 72*, 3949-3954.
- Plangklang, P., Teerakul, M., Boonme, M., & Reungsang, A. (2010). High cell density cultivation of *Cupriavidus* sp. KKU38 for polyhydroxybutyrate (PHB) production from cassava starch hydrolysate. In *The second Thai-Japan Bioplastics and Biobased Materials Symposium (AIST-NIA Joint Symposium)* (pp. 12). Thailand.
- Quillaguaman, J., Hashim, S., Bento, F., Mattiasson, B., & Hatti-Kaul, R.(2005). Poly (β -hydroxybutyrate) production by a moderate halophile, *Halomonas boliviensis* LCi using starch hydrolysate as substrate. *Journal of Applied Microbiology, 99*, 151-157.
- Ramsay, B. A., Lonaliza, K., Chavarie, C., Dube, B., Bataille, P., & Ramsay, J. A . (1990). Production of poly-(β -Hydroxybutyric-Co- β -Hydroxyvaleric) acid. *Application and Environmental Microbial, 56*, 2093-2098.
- Reddy, C.S.K., Ghai, R., Rashmi, V.C., & Kalia. (2003). Polyhydroxyalkanoates: an overview. *Bioresource Technology, 87*, 137-146.

- Rijk ,T.C., Pieter, V. M.,Gerrit, E., Ruud, A. W. (2005). *Methods for analysis of poly (3-hydroxyalkanoate) (PIA) composition.* Retrieved March 22, 2011,from <http://onlinelibrary.wiley.com/doi/10.1002/3527600035.bpol3b01/abstract>
- Ryu, H.W., Sei, K. H.,Yong, K. C., & Ho, N. C. (1997). Production of poly (3-hydroxybutyrate) by high cell density Fed-Batch culture of *Alcaligenes eutrophus* with phosphate limitation. *Biotechnology and Bioengineering*, 55, 30-32.
- Sangkharak, K., & Prasertsan, P. (2007). Optimization of polyhydroxybutyrate production from a wild type and two mutant strains of *Rhodobacter sphaeroides* using statistical method. *Journal of Biotechnology*, 132, 331-340.
- . (2008).Nutrient optimization for production of polyhydroxybutyrate from halotolerant photosynthetic bacteria cultivated under aerobic-dark condition. *Electronic Journal of Biotechnology*, 11, 1-12.
- Sco, J. K., Yoon, J. Y., Oh, J.T., & Kim, W.S. (1998).Optimum growth conditions and pH control solution for PHB biosynthesis in *A. eutrophus*. *Journal of Industrial and Engineering Chemistry*, 4, 215-220.
- Shahrokh, S. (2004). Simulation and optimization in fed-batch culture of *Ralstonia eutropha*. *Process Biochemistry*, 39, 963-969.
- Shi, H.P., Lee, C. M., & Ma,W.H. (2007). Influence of electron acceptor, carbon, nitrogen, and phosphorus on polyhydroxyalkanoate (PHA) production by *Brachymonas* sp. P12. *World Journal of Microbiology and Biotechnology*, 23, 625-632.
- Silva, L.F.,Tapiro, M.K., Ramos, M.E.M., Carter, J.M., Pradella, J.G.C., & Gomez, J.G.C. (2004). Poly-3-hydroxybutyrate (P3HB) production by bacteria from xylose, glucose and sugar cane bagasse hydrolysate. *Journal of Industrial Microbiology and Biotechnology*,31, 245-254.
- Soccol, C.R., Vandenberghe, L.P.S., Rodrigues, C., & Pandey, A.(2006). New perspectives for citric acid production and application. *Food Technology and Biotechnololy*, 44 (2), 141-149.
- Sudesh, K., Abe, H., & Doi, Y. (2000). Synthesis, structure and properties of polyhydroxyalkanoates: biological polyesters. *Progress in Polymer Science*, 25,1503-1555.

- Suriyamongkol, P., Weselake, R., Narine, S., Moloney, M., & Shah, S. (2007). Biotechnological approaches for the production of polyhydroxyalkanoates in microorganisms and plants- A review. *Biotechnology Advances*, 25, 148-175.
- Tanamool, V., Danvirutai, P., Thanonkeo, P., Imai ,T., & Kaewkannetra, P. (2009). Production of Poly- β -hydroxybutyric acid (PHB) from sweet sorghum juice by *Alcaligenes eutrophus* TISTR 1095 and *Alcaligenes latus* ATCC 29714 via batch fermentation, p.95. In *The 3rd Internationnal conference on Fermentation Technology for Value Added Agricultural Products (FerVAAP)*, 26-28 August 2009. Khon Kaen, Thailand.
- Verlinden, R.A.J., Hill, D.J., Kenward, M.A., Williams, C.D., & Radecka, I. (2007). Bacterial synthesis of biodegradable polyhydroxyalkanoates. *Journal of Applied Microbiology*, 102 ,1437-1449.
- Wang, F., & Lee, S. Y. (1997). Poly (3-Hydroxybutyrate) production with high productivity and high polymer content by a Fed-Batch culture of *Alcaligenes latus* under nitrogen limitation. *Applied and Enviromental Microbiology*, 63, 3703-3706.
- Wang, Y.J., Hua, F.L., Tsang, Y.F., Chan,S.Y., Sin, S.N., Chua, H. , Yu, P. H.F., & Ren, N.Q. (2007). Synthesis of PHAs from waster under various C:N ratios. *Bioresource Technology*, 98, 1690-1693.
- Weatherburn, M. W. (1967). Phenol-hypochlorite reaction for determination of ammonia. *Analytical Chemistry* , 39, 971-974.
- Wikipedia. (2011). *Sudan Black B*. Retrievced March 22, 2011, from http://en.wikipedia.org/wiki/Sudan_Black_B
- Yezza, A., Halasz, A., Levadoux, W., & Hawari, J. (2007). Production of poly- β -hydroxybutyrate (PHB) by *Alcaligenes latus* from maple sap. *Application Microbial Biotechnology*, 77, 269-274.
- Yolanda, G. G., Jesús, N., Jesús, C., Orfil, G. R., Martin, K., Aid, A., & Gerhart, B. (2008). Biosynthesis and characterization of polyhydroxyalkanoates in the polysaccharide-degrading marine bacterium *Saccharophagus degradans* ATCC 43961. *Journal Industrial Microbiology*, 35, 629-633.
- Yu, P.H., Chua, H., Huang, A. L., LO, W., & Chen, G.Q. (1998). Conversion of food industrial wastes into bioplastics. *Applied Biochemistry and Biotechnology*, 70-72, 603-614.

- Yüksekdağ, Z. N., Aslim, B., Beyatlı, Y., & Mercan, N. (2004). Effect of carbon and nitrogen sources and incubation times on poly-beta-hydroxybutyrate (PHB) synthesis by *Bacillus subtilis* 25 and *Bacillus megaterium* 12. *African Journal of Biotechnology*, 3, 63-66.
- Zhang, S., Norrlöw, O., Wawrzynczyk, J., & Dey, E. S. (2004). Poly (3Hydroxybutyrate) Biosynthesis in the biofilm of *Alcaligenes eutrophus*, using glucose enzymatically released from pulp fiber sludge. *Applied and Environmental Microbiology*, 70, 6776-6782.