

DAFTAR PUSTAKA

- Abdel-Rahim AM dan Arbab HA. 1985a. Factors affecting spore germination in *Aspergillus niger*. *Mycopathologia* 89: 75-79.
- Abdel-Rahim AM dan Arbab HA. 1985b. Nutrient requirements in germination of conidiospores of *Aspergillus niger* V. Tieghen. *Mycopathologia* 92: 111-113.
- Abraham S, Kamini NR, dan Gowthaman MK. 2011. Process Strategies for Alkaline Lipase Production using *Aspergillus Niger* MTCC 2594. *J. App. Pharm.* 01 (03): 126-133.
- Achena WMJ, Verchot L, Franken YJ, Mathijs E, Singh VP, Aerts R, and Muys B. 2008. *Jatropha* bio-diesel production and use. *Biomass Bioenergy* 32: 1063-1084.
- Aguieiras ECG, Cavalcanti-Oliveira ED, and Freire DMG. 2015. Current status and new developments of biodiesel production using fungal lipases. *Fuel*. 159: 52-67.
- Akbar E, Yaakob Z, Kamarudin S, and Ismail M. 2009. Characteristics and Composition of *Jatropha curcas* oil seed from Malaysia and its potential as Biodiesel Feedstock. *Eur. J. Scientific Res.* 29: 396-403.
- [Amfep] the Association of Manufacturers and Formulators of Enzyme Products. 2015. *List of commercial enzymes*. Amfep International.
- Anusha NC, Umikalsom MS, Ling TC, and Ariff AB. 2012. Relationship between Fungal Growth Morphologies and Ability to Secrete Lipase in Solid State Fermentation. *Asian J. Biotechnol.* 4: 15-29.
- [AOAC] the Association of Official Analytical Chemistry. 2005. *Official Methods of Analysis of AOAC International 18th Edition*. Washington: AOAC International.
- Bennett JW. An overview of the genus *Aspergillus*. In: Machida, M. and Gomi, K (Eds). 2010. *Aspergillus: Molecular Biology and Genomics*. Portland: Causer Academic Press. 1-17.
- Blumhoff ML. 2013. Genetic engineering of *Aspergillus niger* for organic acid production. *Desertasi*: University of Natural Resources and Life Science Vienna.
- Burkert JFM, Maugeri F, and Rodrigues MI. 2004. Optimization of extracellular lipase production by *Geotrichum sp.* using factorial design. *Bioresour. Technol.* 91 (1): 77-84.

- Carvalho PO, Calafatti SA, Marassi M, Silva DM, Contesini FJ, Bizaco R, and Macedo GA. 2005. Potential of enantioselective biocatalysis by microbial lipases. *Quim. Nova.* 28 (4): 614-616.
- Chaturvedi M, Singh M, Chugh MR, Pandey S. 2010. Lipase production from *Bacillus subtilis* MTCC 6808 by solid state fermentation using ground nut oil cake as substrate. *Res. J. Microbiol.* 5: 725-730.
- Colla LM, Rizzardi J, Pinto MH, Reinehr CO, Bertolin TE, and Costa JAV. 2010. Simultaneous production of lipases and biosurfactants by submerged and solid-state bioprocesses. *Bioresour. Technol.* 101 (21): 8308-8314.
- Contesini FJ, Lopes DB, Macedoa GA, Nascimento MG, and Carvalho PO. 2010. *Aspergillus sp.* lipase: Potential biocatalyst for industrial use. *J. Mol. Catal., B Enzym.* 67 (3-4): 163-171.
- Damaso MCT, Passianoto MA, de Freitas SC, Freire DMG, Lago RCA, and Couri S. 2008. Utilization of agroindustrial residues for lipase production by solid-state fermentation. *Braz. J. Microbiol.* 39 (4): 676-681.
- Darmasiwi S. 2010. *Screening* Isolat Fungi Lipolitik Indigenus dan Karakterisasi Lipase yang Dihasilkan pada *Solid-State Fermentation*. *Tesis*: Universitas Gadjah Mada.
- Deng X, Fang Z, and Liu YH. 2010. Ultrasonic Transesterification of *Jatropha curcas* L. Oil to Biodiesel by a Two-Step Process. *Energy Convers. Manage.* 51: 2802-2807.
- Diaz-Montano DM. Continuous Agave Juice Fermentation for Producing Bioethanol. In: Matovic MD. 2013. *Biomass Now - Sustainable Growth and Use*.
- Dijksterhuis J, Nijse J, Hoekstra FA, Golovina EA. 2007. High viscosity and anisotropy characterize the cytoplasm of fungal dormant stress-resistant spores. *Eukaryotic Cell* 6: 157-170.
- Elibol M and Ozer D. 2000. Influence of oxygen transfer on lipase production by *Rhizopus arrhizus*. *Process. Biochem.* 36 (4): 325-329.
- El-Imam AMA, Kazeem MO, Odebisi MB, Oke MA, dan Abidoye AO. 2013. Production of Itaconic Acid from *Jatropha curcas* Seed Cake by *Aspergillus terreus*. *Not. Sci. Biol.* 5 (1): 57-61.
- Ertugrul S, Donmez G, and Takac S. 2007. Isolation of lipase producing *Bacillus sp.* from olive mill wastewater and improving its enzyme activity. *J. Hazard Mater.* 149: 720-724.

- Falony G, Armas JC, Mendoza JCD, dan Hernández JML. 2006. Production of Extracellular Lipase from *Aspergillus niger* by Solid-State Fermentation. *Food Technol. Biotechnol.* 44 (2): 235-240.
- Frisvad JC, Larsen TO, Thrane U, Meijer M, Varga J, Samson RA, and Nielsen KF. 2011. Fumonisin and Ochratoxin Production in Industrial *Aspergillus niger* Strains. *PloS ONE* 6 (8): 1-6
- Frossard R dan Oertli JJ. 1982. Growth and Germination of Fungal Spores in Guttation Fluids of Barley Grown with Different Nitrogen Sources. *Trans. Br. mycol. Soc.* 78 (2): 239-245.
- Garlapati VK, and Banerjee R. 2010. Optimization of lipase production using differential evolution. *Biotechnol. Bioprocess. Eng.* 15: 254-260.
- Gaur S, Viswanathan B, Seemamahannop R, Kapila S, and Book NL. 2011. Development and Evaluation of an Efficient Process for the Detoxification of *Jatropha* Oil and Meal. London: Nature Publishing.
- Gombert AK, Pinto AI, Castilho LR, and Freire DMG. 1999. Lipase production by *Penicillium restrictum* in solid-state fermentation using babassu oil cake as substrate. *Process Biochem.* 35: 85-90.
- Gubitz GM, Mittelbach M, and Trabi M. 1999. Exploitation of the tropical oil seed plant *Jatropha curcas*L. *Bioresour. Technol.* 67: 73-82.
- Haba E, Bresco O, Ferrer C, Marqués A, Busquets M, and Manresa A. 2000. Isolation of lipase-secreting bacteria by deploying used frying oil as selective substrate. *Enzym. Microb. Technol.* 26: 40-44.
- Haerussana ANEM. 2017. Pengaruh Suhu dan Waktu Hidrolisis Bungkil Jarak (*Jatropha curcas* L.) terhadap Derajat Hidrolisis dan Aplikasinya dalam Produksi Lipase *Aspergillus flavus* C65I6 Menggunakan Metode *Submerged Fermentation*. Tesis: Universitas Gadjah Mada.
- Hasan F, Shah AA, and Hameed A. 2006. Industrial applications of microbial lipases. *Enzyme Microb. Technol.* 39 (2): 235-251.
- Haslinawati W. 2011. Optimasi Produksi Lipase dari *Aspergillus niger* 65I6 pada Medium Fermentasi Bungkil Biji Jarak Menggunakan Metode *Solid-State Fermentation* (SSF). Tesis: Universitas Gadjah Mada.
- Hassouni H, Ismaili-Alaoui M, Lamrani K, Gaime-Perraud I, Augur C, dan Roussos S. 2007. Comparative Spore Germination of Filamentous Fungi on Solid State Fermentation Under Different Culture Conditions. *Micol. Aplicada Int.* 19 (1): 7-14.

- Hauser JT. 2006. *Techniques for Studying Bacteria and Fungi*. Burlington: Carolina Biological Supply Company.
- Hayer K, Stratford M, and Archer DB. 2013. Structural Features of Sugars That Trigger or Support Conidial Germination in the Filamentous Fungus *Aspergillus niger*. *Appl. Environ. Microbiol.* 79 (22): 6924-6931.
- Hayer K, Stratford M, and Archer DB. 2014. Germination of *Aspergillus niger* Conidia Is Triggered by Nitrogen Compounds Related to L-Amino Acids. *Appl. Environ. Microbiol.* 80 (19): 6046-6053.
- Henning R. 2002. Using the Indigenous Knowledge of *Jatropha*: The Use of *Jatropha curcas* L. Oil as Raw Material and Fuel. *IK Notes* 47: 1-4.
- Hidayah N. 2015. Produksi Lipase *Aspergillus niger* 65I6 menggunakan Media Hidrolisat Bungkil Biji Jarak dengan Metode *Submerged Fermentation* (SmF). *Tesis*: Universitas Gadjah Mada.
- Hidayat C, Kuntoro MDP, Hastuti P, Sumangat D, and Hidayat T. 2008. Optimasi Sintesis Metil Oleat Menggunakan Biokatalis Lipase dari Kecambah Biji *Jatropha curcas* L. *J. Pascapanen* 5 (2): 1-9.
- Hidayat N, Padaga MC, dan Suhartini S. 2006. *Mikrobiologi Industri*. Yogyakarta: Andi Offset.
- Hita E, Robles A, Camacho B, González PA, Esteban L, Jiménez MJ, Munío MM, and Molina E. 2009. Production of structured triacylglycerols by acidolysis catalyzed by lipases immobilized in a packed bed reactor. *Biochem. J. Eng.* 46 (3): 257-264.
- Holmquist M. 2000. Alpha/Beta-Hydrolase Fold Enzymes: Structures, Functions and Mechanisms. *Curr Protein Pept Sci.* 1 (2): 209-235.
- Houde A, Kademi A, and Leblanc D. 2004. Lipases and their industrial applications: An overview. *Appl. Biochem. Biotechnol.* 118 (1-3): 155-170.
- Hui YH and Khachatourians GG. 1995. *Food Biotechnology: microorganisms food science and technology*. New Jersey: John Wiley and sons.
- Issac S. 1999. What Factor influence the Germination and Outgrowth of Fungal Spores? *Mycologist* 12 (2): 91-92.
- Jaeger KE, Dijkstra BW, and Reetz MT. 1999. Bacterial biocatalysts: molecular biology, three-dimensional structures, and biotechnological applications of lipases. *Annu. Rev. Microbiol.* 53: 315-351.
- Jaeger KE dan Eggert T. 2002. Lipases for biotechnology. *Curr. Opin. Biotechnol.* 13 (4): 390-397.

- van der Kaaij RM, Ram AFJ, Schaap P, and Punt PJ. Genomic Approaches for Identification of the Biopolymer Degrading Enzyme Network of *Aspergillus niger*. In: Hofrichter M (eds). 2011. *Industrial Applications. The Mycota (A Comprehensive Treatise on Fungi as Experimental Systems for Basic and Applied Research)*, vol 10. Berlin: Springer. 407-424.
- Kamini NR, Mala JGS, and Puvanakrishnan R. 1998. Lipase production from *Aspergillus niger* by solid-state fermentation using gingelly oil cake, *Process Biochem.* 33: 505-511.
- Kamini NR, Fujii T, Kurosu T, and Iefuji H. 2000. Production, purification and characterization of an extracellular lipase from yeast, *Cryptococcus sp.* S-2. *Process. Biochem.* 36: 317-24.
- Karaj S and Muller J. 2009. Optimization of mechanical extraction of *Jatropha curcas* seeds. *Landtechnik.* 64 (3): 164-167.
- Khandelwal S. 2013. *Aspergillus: Habitat, Reproduction And Importance.* Online at <http://www.biologydiscussion.com/fungi/aspergillus-habitat-reproduction-and-importance-ascomycotina/24000>. [7 Juli 2017]
- Klich MA. 2009. Health effects of *Aspergillus* in food and air. *Toxicol. Ind. Health* 25: 657-667.
- Koser S, Anwar Z, Iqbal Z, Anjum A, Aqil T, Mehmood S, dan Irshad M. 2014. Utilization of *Aspergillus oryzae* to produce pectin lyase from various agro-industrial residues. *J. Rad. Res. Appl. Sci.* 7: 327-332.
- Krijgsheld P, Bleichrodt R, van Veluw GJ, Wang F, Müller WH, Dijksterhuis J, and Wösten HAB. 2013. Development in *Aspergillus*. *Stud. Mycol.* 74: 1-29.
- Kumar A and Sharma S. 2008. An evaluation of multipurpose oil seed crop for industrial uses (*Jatropha curcas* L.): A review. *Ind. Crops Prod.* 28: 1-10.
- Kumar G, Sen B, and Lin CY. 2013. Pretreatment and hydrolysis methods for recovery of fermentable sugars from de-oiled *Jatropha* waste. *Bioresour. Technol.* 145: 275-279.
- Kurnia DRD. 2010. Studi Aktivitas Enzim Lipase dari *Aspergillus niger* sebagai Biokatalis pada Proses Gliserolisis untuk Menghasilkan Monoasilgliserol. *Tesis.* Universitas Diponegoro.
- Kurniawan SK. 2011. Daya Cerna Protein in Vitro Dua Puluh Minuman Bubuk Komersial Berbasis Kedelai di Indonesia. *Skripsi* : Institut Pertanian Bogor.
- Lanser AC, Manthey LK, and Hou CT. 2002. Regioselectivity of New Bacterial Lipases Determined by Hydrolysis of Triolein. *Curr. Microbiol.* 44: 336-340.

- Lehninger AL. 1982. *Dasar-Dasar Biokimia Jilid 1*. Terjemahan Maggy Thenawidjaja, 2005. Jakarta: Erlangga.
- Lestari D, Mulder WJ, dan Sanders JPM. 2011. *Jatropha* Seed Protein Functional Properties for Technical Applications. *Biochem. Eng. J.* 53: 297-304.
- van Leeuwen MR, Krijgsheld P, Bleichrodt R, Menke H, Stam H, Stark J, Wösten HAB, and Dijksterhuis J. 2013a. Germination of conidia of *Aspergillus niger* is accompanied by major changes in RNA profiles. *Stud. Mycol.* 74 (1): 59-70.
- van Leeuwen MR, Krijgsheld P, Wyatt TT, Golovina EA, Menke H, Dekker A, Stark J, Stam H, Bleichrodt R, Wösten HAB, and Dijksterhuis J. 2013b. The effect of natamycin on the transcriptome of germinating conidia. *Stud. Mycol.* 74 (1): 59-70.
- Liaud N, Giniés C, Navarro D, Fabre N, Crapart S, Herpoël-Gimbert I, Levasseur A, Raouche S, and Sigoillot JC. 2014. Exploring fungal biodiversity: organic acid production by 66 strains of filamentous fungi. *Fungal Biol. Biotechnol.* 1: 1-10.
- Lim HC and Shin HS. 2013. *Fed-Batch Cultures: Principles and Applications of Semi-Batch Bioreactors*. Cambridge: Cambridge University Press.
- Lopes DB, Fraga LP, Fleuri LF, and Macedo GA. 2011. Lipase and esterase - to what extent can this classification be applied accurately? *Ciênc. Tecnol. Aliment.* 31 (3): 608-613.
- Lowry OH, Rosenbrough NJ, Farr AL, dan Randall RJ. 1951. Protein Measurement with Folin Phenol Reagent. *J. Biol. Chem.* 193: 265-275.
- Mahadik ND, Puntambekar US, Bastawde KB, Khire JM, and Gokhale DV. 2002. Production of acidic lipase by *Aspergillus niger* in solid state fermentation. *Process. Biochem.* 38 (5): 715-721.
- Mahajan GN dan Pai JS. 1988. Defatting of Whole Peanut Kernels after Infrared Heating. *Food Chem.* 27 (3): 237-240.
- Maia MMD, de Morais MMC, de Morais MA, Melo EHM, and Filho JLL. 1999. Production of extracellular lipase by the phytopathogenic fungus *Fusarium solani* FS1. *Revista de Microbiol.* 30: 304-309.
- Manson WG and Weaver LT. 1997. Fat digestion in the neonate. *Arch. Dis. Child.* 76: F206-F211.

- McDonald W. 2001. *Aspergillus niger* colony surface and reverse. *Online at* http://labmed.ucsf.edu/education/residency/fung_morph/fungal_site/subpages/anigersdsp.html. [7 Juli 2017].
- Menoncin S, Domingues NM, Freire DMG, Toniazzo G, Cansian RL, Oliveira JV, Luccio MD, Oliveira D, and Treichel H. 2008. Study of the extraction, concentration, and partial characterization of lipases obtained from *Penicillium verrucosum* using solid-state fermentation of soybean bran. *Food Bioprocess Technol.* 3(4): 537-544.
- Meyer V, Wu B, and Ram AFJ. 2011. *Aspergillus* as a multi-purpose cell factory: current status and perspectives. *Biotechnol. Lett.* 33(3): 469-476.
- Miller GL. 1959. Use of Dinitrosalicylic Acid Reagent for Determination of Reducing Sugar. *Anal. Chem.* 31 (3): 426-428.
- Miranda OA, Salgueiro AA, Pimentel MCB, LimaFilho JL, Melo EHM, and Dur'an N. 1999. Lipase production by Brazilian strain of *Penicillium citrinum* using an industrial residue. *Bioresour. Technol.* 69:145-7.
- Misra P, Gupta N, Toppo DD, Pandey V, Misra MK, and Tuli R. 2010. Establishment of long-term proliferating shoot cultures of elite *Jatropha curcas* L. by controlling endophytic bacterial contamination. *Plant Cell Tiss. Organ Cult.* 100:189-197.
- Mishra MS, Chandrashekhar B, Chatterjee T, dan Kanwal Singh. 2011. Production of Bio-ethanol from *Jatropha* Oilseed Cakes via Dilute Acid Hydrolysis and Fermentation by *Saccharomyces cerevisiae*. *Int. J. Biotechnol. Appl.* 3 (1): 41-47.
- Mobarak-Qamsari E, Kasra-Kermanshahi R, and Moosavi-nejad Z. 2011. Isolation and identification of a novel, lipase-producing bacterium, *Pseudomonas aeruginosa* KM110. *Iran. J. Microbiol.* 3 (2): 92-98.
- Ndong R, Montrejaud-Vignolesk M, Girons OS, Gabrielle B, Pirot R, Domergue M, and Sablayrolles C. 2009. Life Cycle Assessment of Biofuels from *Jatropha curcas* in West Africa: A Field Study. *GCB Bioenergy* 1 (3): 197-210.
- Openshaw K. 2000. A Review of *Jatropha curcas* L.: An Oil Plant of Unfulfilled Promise. *Biomass Bioenergy* 19: 1-15.
- Osherov N and May GS. 2001. The molecular mechanisms of conidial germination. *FEMS Microbiol. Lett.* 199: 153-160.
- Pereira-Meirelles FV, Rocha-Leão MHM, and Sant'Anna GL Jr. 2000. Lipase location in *Yarrowia lipolytica* cells. *Biotechnol. Lett.* 22: 71-75.

- Pignede G, Wang H, Fudalej F, Gaillardin C, Seman M, and Nicaud JM. 2000. Characterization of an Extracellular Lipase Encoded by LIP2 in *Yarrowia lipolytica*. *J. Bacteriol.* 182 (10): 2802-2810.
- Puente-Rodriguez D. 2010. Biotechnologizing *Jatropha* for local sustainable development. *Agric. Hum. Values* 27: 351-363
- Qian J1, Shi H, and Yun Z. 2010. Preparation of biodiesel from *Jatropha curcas* L. oil produced by two-phase solvent extraction. *Bioresour Technol.* 101 (18): 7.036-7.042.
- Rai B, Shrestha A, Sharma S, dan Joshi J. 2014. Screening, Optimization and Process Scale up for Pilot Scale Production of Lipase by *Aspergillus niger*. *Biomed. Biotechnol.* 2 (3): 54-59.
- Rajendran A, Palanisamy A, and Thangavelu V. 2008. Evaluation of Medium Components by Plackett-Burman Statistical Design for Lipase Production by *Candida rugosa* and Kinetic Modeling. *Chin. J. Biotech.* 24 (3): 436-444.
- Raper KB and Fennell DI. 1965 *The genus Aspergillus*. Baltimore: Williams and Wilkins.
- Rogalska E, Cudrey C, Ferrato F, and Verger R. 1993. Stereoselective Hydrolysis of Triglycerides by Animal and Microbial Lipases. *Chirality* 5: 24-30.
- Rusmana I. 2008. *Sistem Operasi Fermentasi*. Bogor: Institut Pertanian Bogor.
- Salihu A, Alam MZ, Abdulkarim MI, and Salleh HM. 2011. Optimization of lipase production by *Candida cylindracea* in palm oil mill effluent based medium using statistical experimental design. *J. Mol. Catal. B: Enzym* 69 (1-2): 66-73.
- Salihu A, Alam MZ, AbdulKarim MI, and Salleh HM. 2012. Lipase production: An insight in the utilization of renewable agricultural residues. *Resour. Conserv. Recy.* 58: 36-44.
- Sangeetha R, Arulpandi I, and Geetha A. 2011 Bacterial Lipases as Potential Industrial Biocatalysts: An Overview. *Res. J. Microbiol.* 6 (1): 1-24.
- Satiwihardja B, Wibisono B, dan Murdiyatmo U. 2010. *Proses Fermentasi Fed-Batch untuk Produksi Dekstranase dengan Streptococcus sp. B7 (Fed-Batch Fermentation Processes to Produce Dextranase from of Streptococcus sp. B7)*. Bogor: Institut Pertanian Bogor.
- Schuster E, Dunn-Coleman N, Frisvad J, and Dijck P. 2002. On the safety of *Aspergillus niger* - a review. *Appl. Microbiol. Biotechnol.* 59 (4-5): 426-435.

- Sharma D, Kumbhar BK, Verma AK, and Tewari L. 2014. Optimization of Critical Growth Parameters For Enhancing Extracellular Lipase Production by Alkalophilic *Bacillus* sp. *Biocatalysis and Agricultural Biotechnology* 3: 205-211.
- Shiloach J and Fass R. 2005. Growing *E. coli* to high cell density-a historical perspective on method development. *Biotechnol. Adv.* 23:345-357.
- Shivani P, Khushbu P, Faldu N, Thakkar V, and Shubramanian RB. 2011. Extraction and analysis of *Jatropha curcas* L. seed oil. *Afr. J. Biotechnol.* 10 (79): 18210-18213.
- Shu Z, Duan M, Yang J, Xu L, and Yan Y. 2009. *Aspergillus niger* lipase: Heterologous expression in *Pichia pastoris*, molecular modeling prediction and the importance of the hinge domains at both sides of the lid domain to interfacial activation. *Biotechnol. Prog.* 25 (2): 409-416.
- Singh AK and Mukhopadhyay M. 2012. Overview of Fungal Lipase: A Review. *Appl. Biochem. Biotechnol.* 166: 486-520.
- Soleymani S, Alizadeh H, Mohammadian H, Rabbani E, Moazen F, Sadeghi HM, Shariat ZS, Etemadifar Z, and Rabbani M. 2017. Efficient Media for High Lipase Production: One Variable at a Time Approach. *Avicenna. J. Med. Biotechnol.* 9(2): 82-86.
- Soumanou MM, Bornscheuer UT, and Schmid RD. 1998. Two-Step Enzymatic Reaction for the Synthesis of Pure Structured Triacylglycerides. *J. Am. Oil Chem. Soc.* 75: 703-710.
- Staley JT, Gunsalus RP, Lory S, and Perry JJ. 2007. *Microbial Life; Second Edition*. Sunderland: Sinauer Associates.
- Sundar R, Liji T, Rajila C, and Suganyadevi P. 2012. Amylase production by *Aspergillus niger* under submerged fermentation using *Ipomoea batatas*. *Int. J. Appl. Biol. Pharm. Technol.* 3 (2): 175-182.
- Sundar WA dan Kumaresapillai N. 2013. Isolation, Purification and Medium Optimization of Lipase Enzyme Producing Strains of *Aspergillus niger* Isolated from Natural Sources. *Int. J. Pharm. Pharm. Sci.* 5 (2): 321-324.
- Suwariani NP. 2016. Hidrolisis Bungkil Biji Jarak Pagar menjadi Hidrolisat Cair dan Aplikasinya sebagai Medium Produksi Lipase oleh *Aspergillus niger* 6516 dengan Sistem *Submerged Fermentation*. Tesis: Universitas Gadjah Mada.
- Utiahman G, Harmain RM, dan Yusuf N. 2013. Karakteristik Kimia dan Organoleptik Nugget Ikan Layang (*Decapterus* sp.) yang Disubstitusi dengan

Tepung Ubi Jalar Putih (*Ipomea batatas* L.). *Nikè: Jurnal Ilmiah Perikanan dan Kelautan* 1 (3): 126-138.

Ventura SPM and Coutinho JAP. Lipase Production and Purification from Fermentation Broth Using Ionic Liquids. In: Xu X, Guo Z, and Cheong LZ (eds). 2016. *Ionic Liquids in Lipid Processing and Analysis*. Cambridge: AOCS Press. 59-97.

Vokhlu J and Kour A. 2006. Yeast lipases: enzyme purification, biochemical properties and gene cloning. *Electron. J. Biotechnol.* 9 (1): 69-85.

Widjaja T dan Budhikarjo K. 2007. *Pengaruh Recycle Rate dan Konsentrasi Alginate Terhadap Produktifitas Etanol dengan Proses Fermentasi-Ekstraksi*. Surabaya: Institut Teknologi Sepuluh November.

Willey JM, Sherwood LM, and Woolverton CJ. 2009. *Prescott's Principles of Microbiology*. New York: McGraw-Hill Higher Education.

Winarno FG. 2008. *Kimia Pangan dan Gizi*. Jakarta: Gramedia Pustaka Utama.

Yadav RP, Saxena RK, Gupta R, and Davidson S. 1998. Lipase production by *Aspergillus* and *Penicillium* species. *Folia. Microbiol.* 43(4): 373-378.

Yamanè T and Shimizu S. 1984. Fed-batch Techniques in Microbial Processes. *Advances in Biochem Eng./Biotechnol* 30: 147-194.

Ye M, Li EC, Francis G, and Makkar HPS. 2009. Current situation and prospects of *Jatropha curcas* as a multipurpose tree in China. *Agroforest. Syst.* 76: 487-497.

Zanotto SP, Romano IP, Lisboa LUS, Duvoisin Jr. S, Martins M, Lima FA, Silva SF and Albuquerque PM. 2009. Potential application in biocatalysis of mycelium-bound lipases from Amazonian fungi. *J. Braz. Chem. Soc.* 20 (6): 1046-1059.