

## DAFTAR PUSTAKA

- (1) Schmacht, M.; Lorenz, E.; Senz, M. Microbial Production of Glutathione. *World J. Microbiol. Biotechnol.* 2017, 33 (6), 106–106. <https://doi.org/10.1007/S11274-017-2277-7>.
- (2) Hara, K. Y.; Kim, S.; Yoshida, H.; Kiriyama, K.; Kondo, T.; Okai, N.; Ogino, C.; Fukuda, H.; Kondo, A. Development of a Glutathione Production Process from Proteinaceous Biomass Resources Using Protease-Displaying *Saccharomyces Cerevisiae*. *Appl. Microbiol. Biotechnol.* 2012, 93 (4), 1495–1502. <https://doi.org/10.1007/s00253-011-3665-9>.
- (3) Minich, D. M.; Brown, B. I. A Review of Dietary (Phyto)Nutrients for Glutathione Support. *Nutrients* 2019, 11 (9), 1–20. <https://doi.org/10.3390/nu11092073>.
- (4) Prima, A.; Hara, K. Y.; Djohan, A. C.; Kashiwagi, N.; Kahar, P.; Ishii, J.; Nakayama, H.; Okazaki, F.; Prasetya, B.; Kondo, A.; Yopi; Ogino, C. Glutathione Production from Mannan-Based Bioresource by Mannanase/Mannosidase Expressing *Saccharomyces Cerevisiae*. *Bioresour. Technol.* 2017, 245, 1400–1406. <https://doi.org/10.1016/j.biortech.2017.05.190>.
- (5) Meister, A.; E. Anderson, M. GLUTATHIONE. *Ann. Rev. Biochem* 1983, 52 (7), 11–60. <https://doi.org/10.1146/annurev.bi.52.070183.003431>.
- (6) Li, Y.; Wei, G.; Chen, J. Glutathione: A Review on Biotechnological Production. *Appl. Microbiol. Biotechnol.* 2004, 66 (3), 233–242. <https://doi.org/10.1007/s00253-004-1751-y>.
- (7) PAN, H. Glutathione Fermentation Production Method. CN101824451, October 14, 2009.
- (8) Lu, S. C. Glutathione Synthesis. *Biochim. Biophys. Acta - Gen. Subj.* 2013, 1830 (5), 3143–3153. <https://doi.org/10.1016/J.BBAGEN.2012.09.008>.
- (9) Yoshida, H.; Arai, S.; Hara, K. Y.; Yamada, R.; Ogino, C.; Fukuda, H.; Kondo, A. Efficient and Direct Glutathione Production from Raw Starch Using Engineered *Saccharomyces Cerevisiae*. *Appl. Microbiol. Biotechnol.* 2011, 89 (5), 1417–1422. <https://doi.org/10.1007/S00253-010-2968-6>.
- (10) Hirono-Hara, Y.; Mizutani, Y.; Murofushi, K.; Iwahara, K.; Sakuragawa, S.; Kikukawa, H.; Hara, K. Y. Glutathione Fermentation by *Millerozyma Farinosa* Using Spent Coffee Grounds Extract and Seawater. *Bioresour. Technol. Reports* 2021, 15 (June), 100777. <https://doi.org/10.1016/j.biteb.2021.100777>.
- (11) Cha, J. Y.; Park, J. C.; Jeon, B. S.; Lee, Y. C.; Cho, Y. S. Optimal Fermentation Conditions for Enhanced Glutathione Production by *Saccharomyces Cerevisiae* FF-8. *J. Microbiol.* 2004, 42 (1), 51–55.
- (12) Sudiyani, Y.; Faizal, F. A.; Muryanto; Firmansyah, I.; Setiawan, A. A. R. Glutathione from *Saccharomyces Cerevisiae* as By-Product of Second Generation Bioethanol from Oil Palm of Empty Fruit Bunch Fiber. *IOP Conf. Ser. Mater. Sci. Eng.* 2019, 536 (1). <https://doi.org/10.1088/1757-899X/536/1/012142>.
- (13) Glutathione-C10H17N3O6S-PubChem  
<https://pubchem.ncbi.nlm.nih.gov/compound/glutathione> (accessed Aug 10, 2022).

- (14) WIELAND, T. *Chemistry and Properties of Glutathione*; ACADEMIC PRESS INC., 1954. <https://doi.org/10.1016/b978-1-4832-2900-3.50008-0>.
- (15) Iskander, A. The Chemistry of Glutathione. *Insights* 2019, 2 (August), 1–9.
- (16) Pizzorno, J. Glutathione. *Integr. Med.* 2014, 13 (1).
- (17) Franco, R.; Schoneveld, O. J.; Pappa, A.; Panayiotidis, M. I. The Central Role of Glutathione in the Pathophysiology of Human Diseases. *Arch. Physiol. Biochem.* 2007, 113 (4–5), 234–258. <https://doi.org/10.1080/13813450701661198>.
- (18) Gaucher, C.; Boudier, A.; Bonetti, J.; Clarot, I.; Leroy, P.; Parent, M. Glutathione: Antioxidant Properties Dedicated to Nanotechnologies. *Antioxidants* 2018, 7 (5). <https://doi.org/10.3390/ANTIOX7050062>.
- (19) Akram, M.; Asif, H. M.; Uzair, M.; Akhtar, N.; Madni, A.; Ali Shah, S. M.; Hasan, Z. U.; Ullah, A. Amino Acids: A Review Article. *J. Med. Plants Res.* 2011, 5 (17), 3997–4000.
- (20) Anschau, A.; dos Santos, L. O.; Alegre, R. M. A Cost Effective Fermentative Production of Glutathione by *Saccharomyces Cerevisiae* with Cane Molasses and Glycerol. *Brazilian Arch. Biol. Technol.* 2013, 56 (5), 849–857. <https://doi.org/10.1590/S1516-89132013000500017>.
- (21) Amino Acid Structure Chart-GenScript [https://www.genscript.com/amino\\_acid\\_structure.html](https://www.genscript.com/amino_acid_structure.html) (accessed Jan 10, 2023).
- (22) Guyton & Hall, 1997. *Guyton Dan Hall Buku Ajar Fisiologi Kedokteran - 12th Edition*, 13th ed.; Elsevier Health Sciences, 2017.
- (23) Wang, Y.; Xiao, T.; Zhang, Z.; Feng, X. Extraction and Concentration of Glutathione from Yeast by Membranes. *Can. J. Chem. Eng.* 2022, 100 (S1), S195–S204. <https://doi.org/10.1002/cjce.24084>.
- (24) Saranya, N.; Devi, P.; Nithyanantham, S.; Jeyalakmi, R. Cells Disruption by Ultrasonication. *Bionanoscienc*e 2014, 4 (4), 335–337. <https://doi.org/10.1007/S12668-014-0149-2>.
- (25) Shpigun L, Margolin S, and S. M. Flow Injection Determination of Alloxan. *Flow Inject. Anal.* 2008, 25 (1), 53–56.
- (26) Winterbourn, C. C.; Munday, R. Glutathione-Mediated Redox Cycling of Alloxan: Mechanisms of Superoxide Dismutase Inhibition and of Metal-Catalyzed OH Formation. *Biochem. Pharmacol.* 1989, 38 (2), 271–277. [https://doi.org/10.1016/0006-2952\(89\)90037-3](https://doi.org/10.1016/0006-2952(89)90037-3).
- (27) Patton, S.; Josephson, D. V. Observations on the Application of the Nitroprusside Test to Heated Milk. *J. Dairy Sci.* 1949, 32 (5), 398–405. [https://doi.org/10.3168/JDS.S0022-0302\(49\)92058-5](https://doi.org/10.3168/JDS.S0022-0302(49)92058-5).
- (28) Johnson, E. A.; Echavarri-Erasun, C. Yeast Biotechnology. *The Yeasts* 2011, 1, 21–44. <https://doi.org/10.1016/B978-0-444-52149-1.00003-3>.
- (29) Herskowitz, I. Life Cycle of the Budding Yeast *Saccharomyces Cerevisiae*. *Microbiol. Rev.* 1988, 52 (4), 536–553. <https://doi.org/10.1128/MR.52.4.536-553.1988>.
- (30) Mell, J. C.; Burgess, S. M. Yeast as a Model Genetic Organism. *eLS* 2003, No. March. <https://doi.org/10.1038/npg.els.0000821>.
- (31) Walsh, R. M.; Martin, P. A. Growth Of *Saccharomyces Cerevisiae* And

- Saccharomyces Uvarum In A Temperature Gradient Incubator. *J. Inst. Brew* 83, 169–172. <https://doi.org/10.1002/j.2050-0416.1977.tb06813.x>.
- (32) Saccharomyces cerevisiae | Viticulture and Enology <https://wineserver.ucdavis.edu/industry-info/enology/wine-microbiology/yeast-mold/saccharomyces-cerevisiae> (accessed Dec 8, 2022).
- (33) Dymond, J. S. Saccharomyces Cerevisiae Growth Media. *Methods Enzymol.* 2013, 533, 191–204. <https://doi.org/10.1016/B978-0-12-420067-8.00012-X>.
- (34) Selvakumaran, J.; Jell, G. A Guide to Basic Cell Culture and Applications in Biomaterials and Tissue Engineering. *Biomater. Artif. Organs Tissue Eng.* 2005, 215–226. <https://doi.org/10.1533/9781845690861.4.215>.
- (35) Counting yeast with a hemocytometer • Hemocytometer <https://www.hemocytometer.org/counting-yeast-with-a-hemocytometer/> (accessed Jul 28, 2022).
- (36) Factors affecting the growth of Saccharomyces cerevisiae in batch culture and in solid sate fermentation. *Electron J Environ Agric Food Chem* [https://www.researchgate.net/publication/254258150\\_Factors\\_affecting\\_the\\_growth\\_of\\_Saccharomyces\\_cerevisiae\\_in\\_batch\\_culture\\_and\\_in\\_solid\\_sate\\_fermentation\\_Electron\\_J\\_Environ\\_Agric\\_Food\\_Chem](https://www.researchgate.net/publication/254258150_Factors_affecting_the_growth_of_Saccharomyces_cerevisiae_in_batch_culture_and_in_solid_sate_fermentation_Electron_J_Environ_Agric_Food_Chem) (accessed Jan 10, 2023).
- (37) Factors that Affect the Rate of Respiration in Yeast | 123 Help Me <https://www.123helpme.com/essay/Factors-that-Affect-the-Rate-of-Respiration-118830> (accessed Jan 10, 2023).
- (38) Olivares-Marin, I. K.; González-Hernández, J. C.; Regalado-Gonzalez, C.; Madrigal-Perez, L. A. Saccharomyces Cerevisiae Exponential Growth Kinetics in Batch Culture to Analyze Respiratory and Fermentative Metabolism. *J. Vis. Exp.* 2018, 2018 (139). <https://doi.org/10.3791/58192>.
- (39) Arroyo-López, F. N.; Orlić, S.; Querol, A.; Barrio, E. Effects of Temperature, PH and Sugar Concentration on the Growth Parameters of Saccharomyces Cerevisiae, S. Kudriavzevii and Their Interspecific Hybrid. *Int. J. Food Microbiol.* 2009, 131 (2–3), 120–127. <https://doi.org/10.1016/J.IJFOODMICRO.2009.01.035>.
- (40) Growth profile of Saccharomyces cerevisiae on Yeast... | Download Scientific Diagram [https://www.researchgate.net/figure/Growth-profile-of-Saccharomyces-cerevisiae-on-Yeast-extract-peptonedextrose-YPD-medium\\_fig1\\_331456906](https://www.researchgate.net/figure/Growth-profile-of-Saccharomyces-cerevisiae-on-Yeast-extract-peptonedextrose-YPD-medium_fig1_331456906) (accessed Jan 11, 2023).
- (41) Harada, Y.; Sakata, K.; Sato, S.; Takayama, S. Fermentation Pilot Plant. *Ferment. Biochem. Eng. Handb. Princ. Process Des. Equip. Third Ed.* 2014, 3–15. <https://doi.org/10.1016/B978-1-4557-2553-3.00001-5>.
- (42) Hadiyanto; Azim, M. *Dasar-Dasar Bioproses*.
- (43) Blajman, J. E.; Vinderola, G.; Paez, R. B.; Signorini, M. L. The Role of Homofermentative and Heterofermentative Lactic Acid Bacteria for Alfalfa Silage: A Meta-Analysis. *J. Agric. Sci.* 2020, 158 (1–2), 107–118. <https://doi.org/10.1017/S0021859620000386>.
- (44) Huang, W. C.; Tang, I. C. Bacterial and Yeast Cultures – Process Characteristics, Products, and Applications. *Bioprocess. Value-Added Prod. from Renew. Resour. New Technol. Appl.* 2007, 185–223.

- [https://doi.org/10.1016/B978-044452114-9/50009-8.](https://doi.org/10.1016/B978-044452114-9/50009-8)
- (45) Doelle, H. W. Fermentation. *Bact. Metab.* 1975, 559–692. [https://doi.org/10.1016/B978-0-12-219352-1.50013-X.](https://doi.org/10.1016/B978-0-12-219352-1.50013-X)
- (46) Ouedraogo, J. P.; Tsang, A. Production of Native and Recombinant Enzymes by Fungi for Industrial Applications. *Encycl. Mycol.* 2021, 222–232. [https://doi.org/10.1016/B978-0-12-819990-9.00046-9.](https://doi.org/10.1016/B978-0-12-819990-9.00046-9)
- (47) Ingledew, W. M. M.; Lin, Y. H. Ethanol from Starch-Based Feedstocks. *Compr. Biotechnol. Second Ed.* 2011, 3, 37–49. [https://doi.org/10.1016/B978-0-08-088504-9.00457-8.](https://doi.org/10.1016/B978-0-08-088504-9.00457-8)
- (48) Seow, C. C.; Gwee, C. N. Coconut Milk: Chemistry and Technology. *Int. J. Food Sci. Technol.* 1997, 32 (3), 189–201. [https://doi.org/10.1046/j.1365-2621.1997.00400.x.](https://doi.org/10.1046/j.1365-2621.1997.00400.x)
- (49) Cancel, L. E.; Rivera-Ortiz, J. M.; Santos-Sánchez, M. Effect of the Amount of Water on the Extraction of Coconut Milk at Two Temperature Ranges. *J. Agric. Univ. Puerto Rico* 1971, 55 (2), 167–173. [https://doi.org/10.46429/JAUPR.V55I2.11047.](https://doi.org/10.46429/JAUPR.V55I2.11047)
- (50) Shankar, P.; Ahuja, S.; Tracchio, A. Coconut Oil: A Review. *Agro Food Ind. Hi. Tech.* 2013, 24 (5), 62–64.
- (51) Srivastava, Y.; Semwal, A. D.; Sharma, G. K. Virgin Coconut Oil as Functional Oil. *Ther. Probiotic, Unconv. Foods* 2018, 291–301. [https://doi.org/10.1016/B978-0-12-814625-5.00015-7.](https://doi.org/10.1016/B978-0-12-814625-5.00015-7)
- (52) Asmoro, N.; Widayastuti, R.; Junius Ndrudu, J. Production Of Virgin Coconut Oil (VCO) Using Fermentation Method Extraction With LRagi Tempe. 2018, 175 (Icase), 74–77. [https://doi.org/10.2991/icase-18.2018.20.](https://doi.org/10.2991/icase-18.2018.20)
- (53) Abujazia, M. A.; Muhammad, N.; Shuid, A. N.; Soelaiman, I. N. The Effects of Virgin Coconut Oil on Bone Oxidative Status in Ovariectomised Rat. *Evidence-based Complement. Altern. Med.* 2012, 2012 (3), 837–845. [https://doi.org/10.1155/2012/525079.](https://doi.org/10.1155/2012/525079)
- (54) Mujdalipah S. Pengaruh Ragi Tradisional Indonesia Dalam Proses Fermentasi Santan Terhadap Karakteristik Rendemen, Kadar Air, Dan Kadar Asam Lemak Bebas Virgin Coconut Oil (Vco) Effect of Traditional Yeast on Yield Characteristic, Moisture Content, and Free Fatty Acid L. *Fortech* 2016, 1 (1), 2016.
- (55) Aditiya, R.; Rusmarilin, H.; Limbong, L. N. Optimasi Pembuatan Virgin Coconut Oil (VCO) Dengan Penambahan Ragi Roti (*Saccharomyces Cerevisiae*) Dan Lama Fermentasi VCO Pancingan. *Ilm. Dan Teknol. Pangan* 2014, 2 (2), 51–57.
- (56) Djajasoepena, S.; Suprijana, O.; Resmelia, M. Virgin Coconut Oil Production by Fermentation Using *Saccharomyces Cerevisiae*. *Int. Semin. Chem.* 2011, 24–25.
- (57) Paputungan, M. Optimasi Penggunaan Starter Dengan Metode Pancingan Dan Fermentasi Berbantuan Bakteri *Saccharomyces Cerevisiae* Untuk Mengoptimalkan Tahap Pemisahan Antara Fase Lemak, Protein Dan Air Pada Pembuatan VCO. *Jambura J. Chem.* 2021, 3 (1).
- (58) Ngatemin., Nurahman., Isworo, J. K. Pengaruh Lama Fermentasi Pada Produksi Minyak Kelapa Murni ( Virgin Coconut Oil ) Terhadap Sifat Fisik , Kimia , Dan

- Organoleptik Effect of Fermentation Time on Virgin Coconut Oil ( Vco ) for Character Physical , Chemical , and Organoleptic. *J. Pangan dan Gizi* 2013, 04 (08), 9–18.
- (59) Hapsari, N.; Welasih, T. Pembuatan Virgin Coconut Oil (Vco) Dengan Metode Sentrifugasi. *J. Teknol. Pangan* 2013, 4 (2). <https://doi.org/10.33005/JTP.V4I2.441>.
- (60) Santoso, D. D.; Penggalih, I. T.; Riski, D. E.; Pamasaria, H. A. Perancangan Mesin Pengolah Minyak Kelapa Dengan Sistem Sentrifugal. *IMDeC* 2019.
- (61) Bachhawat, A. K.; Ganguli, D.; Kaur, J.; Kasturia, N.; Thakur, A.; Kaur, H.; Kumar, A.; Yadav, A. Glutathione Production in Yeast. *Yeast Biotechnol. Divers. Appl.* 2009, 259–280. [https://doi.org/10.1007/978-1-4020-8292-4\\_13/COVER](https://doi.org/10.1007/978-1-4020-8292-4_13).
- (62) Rollini, M.; Manzoni, M. Influence of Different Fermentation Parameters on Glutathione Volumetric Productivity by *Saccharomyces Cerevisiae*. *Process Biochem.* 2006, 41 (7), 1501–1505. <https://doi.org/10.1016/j.procbio.2006.02.011>.
- (63) Grahame, D. A. S.; Bryksa, B. C.; Yada, R. Y. Factors Affecting Enzyme Activity. *Improv. Tailoring Enzym. Food Qual. Funct.* 2015, 11–55. <https://doi.org/10.1016/B978-1-78242-285-3.00002-8>.
- (64) Muregi, Abubakar, Muhammad, M.S Abolarin, O . O. Influence Of Temperature And Agitation Speed On Fermentation Process During Production Of Bioethanol Fuel From Cassava. *Int. J. Eng. Adv. Technol. Stud.* 2021, 9, 40–46.
- (65) View of Pengaruh Lama Fermentasi terhadap Rendemen dan Sifat Fisikokimia VCO (Virgin Coconut Oil). <https://profood.unram.ac.id/index.php/profood/article/view/188/121> (accessed Feb 21, 2023).
- (66) Appala, R. N.; Chigurupati, S.; Appala, R. V. V. S. S.; Selvarajan, K. K.; Mohammad, J. I. A Simple HPLC-UV Method for the Determination of Glutathione in PC-12 Cells. *Scientifica (Cairo)*. 2016, 2016.