

DAFTAR PUSTAKA

- A, A., E.K, R. dan Mathew, J. (2020). Characterization of biosurfactant produced by the endophyte Burkholderia sp. WYAT7 and evaluation of its antibacterial and antibiofilm potentials. *Journal of Biotechnology*, 313, 1–10. hlm. <https://doi.org/10.1016/j.jbiotec.2020.03.005>
- Afzal, I., Shinwari, Z. K., Sikandar, S. dan Shahzad, S. (2019). Plant beneficial endophytic bacteria: Mechanisms, diversity, host range and genetic determinants. Dalam *Microbiological Research* (Vol. 221, 36–49. hlm.). Elsevier GmbH. <https://doi.org/10.1016/j.micres.2019.02.001>
- Albasri, H. M., Almohammadi, A. A., Alhhazmi, A., Bukhari, D. A., Waznah, M. S. dan Mawad, A. M. M. (2024). Production and characterization of rhamnolipid biosurfactant from thermophilic *Geobacillus stearothermophilus* bacterium isolated from Uhud mountain. *Frontiers in Microbiology*, 15. <https://doi.org/10.3389/fmicb.2024.1358175>
- Amer, M. A., Wasfi, R. dan Hamed, S. M. (2023). Biosurfactant from Nile Papyrus endophyte with potential antibiofilm activity against global clones of *Acinetobacter baumannii*. *Frontiers in Cellular and Infection Microbiology*, 13. <https://doi.org/10.3389/fcimb.2023.1210195>
- Anderson, R. J., Groundwater, P. W., Todd, A. dan Worsley, A. J. (2012). Antibacterial Agents: Chemistry, Mode of Action, Mechanisms of Resistance and Clinical Applications. Dalam *Antibacterial Agents: Chemistry, Mode of Action, Mechanisms of Resistance and Clinical Applications*. <https://doi.org/10.1002/9781118325421>
- Andreolli, M., Villanova, V., Zanzoni, S., D’Onofrio, M., Vallini, G., Secchi, N. dan Lampis, S. (2023). Characterization of trehalolipid biosurfactant produced by the novel marine strain *Rhodococcus* sp. SP1d and its potential for environmental applications. *Microbial Cell Factories*, 22(1). <https://doi.org/10.1186/s12934-023-02128-9>
- Apak, R., Özyürek, M., Güçlü, K. dan Çapanoğlu, E. (2016). Antioxidant activity/capacity measurement. 1. Classification, physicochemical principles, mechanisms, and electron transfer (ET)-based assays. Dalam *Journal of Agricultural and Food Chemistry* (Vol. 64, Nomor 5, 997–1027. hlm.). American Chemical Society. <https://doi.org/10.1021/acs.jafc.5b04739>
- Aparna, A., Srinikethan, G. dan Smitha, H. (2012). Production and characterization of biosurfactant produced by a novel *Pseudomonas* sp. 2B. *Colloids and Surfaces B: Biointerfaces*, 95, 23–29. hlm. <https://doi.org/10.1016/j.colsurfb.2012.01.043>

- Ashita, AE. K. R. dan Mathew, J. (2020). Characterization of biosurfactant produced by the endophyte *Burkholderia* sp. WYAT7 and evaluation of its antibacterial and antibiofilm potentials. *Journal of Biotechnology*, 313, 1–10. hlm. <https://doi.org/10.1016/j.jbiotec.2020.03.005>
- Asker, S. M. E.-S., Abdelsalam, S. M., Ahmed, H. A. E. dan Kheiralla, Z. H. (2024). Investigation of bacterial biosurfactants production using waste industrial oil as carbon source in the electric power plants. *Journal of Scientific Research in Science*, 41(2), 47–70. hlm. <https://doi.org/10.21608/jsrs.2024.331365.1139>
- Astuti, K. I. dan Fitriyanti, F. (2020). KARAKTERISTIK PROTEIN IKAN SEPAT RAWA (*Trichopodus thricopterus*) ASAL KALIMANTAN SELATAN YANG BERPOTENSI SEBAGAI ANTIDIABETES. *Jurnal Ilmiah Ibnu Sina (JIIS): Ilmu Farmasi dan Kesehatan*, 5(1), 201–210. hlm. <https://doi.org/10.36387/jiis.v5i1.392>
- Bagheri, H., Mohebbi, A., S, F., Amani dan Naderi, M. (2022). *Application of Low Molecular Weight and High Molecular Weight Biosurfactant in Medicine/Biomedical/Pharmaceutical Industries* (Inamuddin, Charles Oluwaseun Adetunji, dan Mohd Imran Ahmed, Ed.; 1 ed.). Stacy Masucci. <https://doi.org/https://doi.org/10.1016/B978-0-323-85146-6.00027-9>
- Bezza, F. A. dan Chirwa, E. M. N. (2020). Improvement of biosurfactant production by microbial strains through supplementation of hydrophobic substrates. *Chemical Engineering Transactions*, 79, 91–96. hlm. <https://doi.org/10.3303/CET2079016>
- Bharal, P. dan Konwar, B. K. (2011). Production and physico-chemical characterization of a biosurfactant produced by *Pseudomonas aeruginosa* OBP1 isolated from petroleum sludge. *Applied Biochemistry and Biotechnology*, 164(8), 1444–1460. hlm. <https://doi.org/10.1007/s12010-011-9225-z>
- Casillas-Vargas, G., Ocasio-Malavé, C., Medina, S., Morales-Guzmán, C., Del Valle, R. G., Carballeira, N. M. dan Sanabria-Ríos, D. J. (2021). Antibacterial fatty acids: An update of possible mechanisms of action and implications in the development of the next-generation of antibacterial agents. Dalam *Progress in Lipid Research* (Vol. 82). Elsevier Ltd. <https://doi.org/10.1016/j.plipres.2021.101093>
- Ceresa, C., Fracchia, L., Sansotera, A. C., De Rienzo, M. A. D. dan Banat, I. M. (2023). Harnessing the Potential of Biosurfactants for Biomedical and Pharmaceutical Applications. *Pharmaceutics*, 15(8). <https://doi.org/10.3390/pharmaceutics15082156>

- Chen, B., Wen, J., Zhao, X., Ding, J. dan Qi, G. (2020). Surfactin: A Quorum-Sensing Signal Molecule to Relieve CCR in *Bacillus amyloliquefaciens*. *Frontiers in Microbiology*, 11. <https://doi.org/10.3389/fmicb.2020.00631>
- Chen, G. dan Zhu, H. (2005). lux-Marked *Pseudomonas aeruginosa* lipopolysaccharide production in the presence of rhamnolipid. *Colloids and Surfaces B: Biointerfaces*, 41(1), 43–48. hlm. <https://doi.org/10.1016/j.colsurfb.2004.11.005>
- Chinnasamy, M., Rathanasamy, R., Selvam, S., Mohankumar, H. K., Anandraj, M. dan Pal, S. K. (2022). Biosurfactant as Biostimulant: Factors Responsible for Plant Growth Promotions. Dalam Inamuddin dan C. O. Adetunji (Ed.), *Food Chemistry* (Vol. 125, Nomor 4). Nikki P. Levy. <https://doi.org/10.1016/j.foodchem.2010.10.017>
- Chrzanowski, Ł., Ławniczak, Ł. dan Czaczyk, K. (2012). Why do microorganisms produce rhamnolipids? Dalam *World Journal of Microbiology and Biotechnology* (Vol. 28, Nomor 2, 401–419. hlm.). <https://doi.org/10.1007/s11274-011-0854-8>
- D'aes, J., De Maeyer, K., Pauwelyn, E. dan Höfte, M. (2010). Biosurfactants in plant-*Pseudomonas* interactions and their importance to biocontrol. *Environmental Microbiology Reports*, 2(3), 359–372. hlm. <https://doi.org/10.1111/j.1758-2229.2009.00104.x>
- Dayrit, F. M. (2014). Lauric acid is a medium-chain fatty acid, coconut oil is a medium-chain triglyceride. *Philippine Journal of Science*, 143(2), 157–166. hlm. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84973594594&partnerID=40&md5=3be1eb5b118c720d64df22da09d8c262>
- Djafri-Dib, S., Yalaoui-Guellal, D., Amessis-Ouchemoukh, N., Madani, K. dan Ouchemoukh, S. (2025). Optimization of Lipopeptide Biosurfactant Production with Anti-Inflammatory and Antimicrobial Activities. *Current Bioactive Compounds*, 21(1). <https://doi.org/10.2174/0115734072287039240214112330>
- Elazzazy, A. M., Abdelmoneim, T. S. dan Almaghrabi, O. A. (2015). Isolation and characterization of biosurfactant production under extreme environmental conditions by alkali-halo-thermophilic bacteria from Saudi Arabia. *Saudi Journal of Biological Sciences*, 22(4), 466–475. hlm. <https://doi.org/10.1016/j.sjbs.2014.11.018>
- Fatimah, F., Rahayuningtyas, N. D., Nastiti, A., Alawiyah, D. D., Ramadan, R., Geraldi, A. dan Junairah, J. (2024). Antibacterial and biosurfactant activity of endophytic bacteria isolated from mangrove plant in Lamongan, Indonesia. *Biodiversitas Journal of Biological Diversity*, 25(7). <https://doi.org/10.13057/biodiv/d250725>

- Gallia, M. C., Ferrari, A., Bajda, L. dan Bongiovanni, G. A. (2024). Antioxidant activity and phenolic content of herbal infusions from medicinal plants used in Argentina. *Food Production, Processing and Nutrition*, 6(1). <https://doi.org/10.1186/s43014-024-00224-w>
- Gayathiri, E., Prakash, P., Karmegam, N., Varjani, S., Awasthi, M. K. dan Ravindran, B. (2022). Biosurfactants: Potential and Eco-Friendly Material for Sustainable Agriculture and Environmental Safety—A Review. Dalam *Agronomy* (Vol. 12, Nomor 3). MDPI. <https://doi.org/10.3390/agronomy12030662>
- Ghribi, D. dan Ellouze-Chaabouni, S. (2011). Enhancement of *Bacillus subtilis* Lipopeptide Biosurfactants Production through Optimization of Medium Composition and Adequate Control of Aeration . *Biotechnology Research International*, 2011, 1–6. hlm. <https://doi.org/10.4061/2011/653654>
- Heryani, H. dan Putra, M. D. (2017). Kinetic study and modeling of biosurfactant production using *Bacillus* sp. *Electronic Journal of Biotechnology*, 27, 49–54. hlm. <https://doi.org/10.1016/j.ejbt.2017.03.005>
- Hua, F., Wang, H. Q., Zhao, Y. C. dan Yang, Y. (2015). Pseudosolubilized n-alkanes analysis and optimization of biosurfactants production by *Pseudomonas* sp. DG17. *Environmental Science and Pollution Research*, 22(9), 6660–6669. hlm. <https://doi.org/10.1007/s11356-014-3853-0>
- Jimoh, A. A. dan Lin, J. (2019a). Biosurfactant: A new frontier for greener technology and environmental sustainability. Dalam *Ecotoxicology and Environmental Safety* (Vol. 184). Academic Press. <https://doi.org/10.1016/j.ecoenv.2019.109607>
- Jung, G., Jung, S. G. dan Cole, J. M. (2023). Automatic materials characterization from infrared spectra using convolutional neural networks. *Chemical Science*, 14(13), 3600–3609. hlm. <https://doi.org/10.1039/d2sc05892h>
- Jurado, E., Fernández-Serrano, M., Núñez-Olea, J., Luzón, G. dan Lechuga, M. (2006a). Simplified spectrophotometric method using methylene blue for determining anionic surfactants: Applications to the study of primary biodegradation in aerobic screening tests. *Chemosphere*, 65(2), 278–285. hlm. <https://doi.org/https://doi.org/10.1016/j.chemosphere.2006.02.044>
- Khan, R., Shukla, S., Chrzanowski, Ł. dan Rocco, P. (2025). Critical evaluation of sustainable biosurfactants on the example of rhamnolipid and sophorolipid production from waste valorization: Challenges, industrial feasibility, and future perspectives. *Journal of Environmental Chemical Engineering*, 13(6). <https://doi.org/10.1016/j.jece.2025.120485>

- Kim, Y.-G., Lee, J.-H. dan Lee, J. (2021). Antibiofilm activities of fatty acids including myristoleic acid against *Cutibacterium acnes* via reduced cell hydrophobicity. *Phytomedicine*, 91, 153710. hlm. <https://doi.org/https://doi.org/10.1016/j.phymed.2021.153710>
- Kumar, A., Singh, S. K., Kant, C., Verma, H., Kumar, D., Singh, P. P., Modi, A., Droby, S., Kesawat, M. S., Alavilli, H., Bhatia, S. K., Saratale, G. D., Saratale, R. G., Chung, S. M. dan Kumar, M. (2021). Microbial biosurfactant: A new frontier for sustainable agriculture and pharmaceutical industries. Dalam *Antioxidants* (Vol. 10, Nomor 9). MDPI. <https://doi.org/10.3390/antiox10091472>
- Kumari, K., Behera, H. T., Nayak, P. P., Sinha, A., Nandi, A., Ghosh, A., Saha, U., Suar, M., Panda, P. K., Verma, S. K. dan Raina, V. (2023). Amelioration of lipopeptide biosurfactants for enhanced antibacterial and biocompatibility through molecular antioxidant property by methoxy and carboxyl moieties. *Biomedicine and Pharmacotherapy*, 161. <https://doi.org/10.1016/j.biopha.2023.114493>
- Laili, I. D. N. (2024). *ISOLASI BAKTERI ENDOFIT DARI TANAMAN PAKU GEOTERMAL DAN UJI BIOAKTIVITAS METABOLIT SEKUNDERNYA*. Universitas Diponegoro.
- Li, H., Fang, C., Liu, X., Bao, K., Li, Y. dan Bao, M. (2023). Quantitative analysis of biosurfactants in water samples by a modified oil spreading technique. *RSC Advances*, 13(15), 9933–9944. hlm. <https://doi.org/10.1039/d3ra00102d>
- Li, Y., Yang, G., Weng, Y., Xu, L., Hou, F., Devkota, S. dan Zhao, C. X. (2023). Exploring biosurfactants as a sustainable alternative to chemical surfactants. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 677. <https://doi.org/10.1016/j.colsurfa.2023.132291>
- Lourenço, M., Duarte, N. dan Ribeiro, I. A. C. (2024). Exploring Biosurfactants as Antimicrobial Approaches. Dalam *Pharmaceuticals* (Vol. 17, Nomor 9). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/ph17091239>
- Makkar, R. S., Cameotra, S. S. dan Banat, I. M. (2011). Advances in utilization of renewable substrates for biosurfactant production. Dalam *AMB Express* (Vol. 1, Nomor 1, 1–19. hlm.). Springer Verlag. <https://doi.org/10.1186/2191-0855-1-5>
- Mani, P., Dineshkumar, G., Jayaseelan, T., Deepalakshmi, K., Ganesh Kumar, C. dan Senthil Balan, S. (2016). Antimicrobial activities of a promising glycolipid biosurfactant from a novel marine *Staphylococcus saprophyticus* SBPS 15. *Biotech*, 6(2). <https://doi.org/10.1007/s13205-016-0478-7>

- Marchut-Mikołajczyk, O., Drożdżyński, P., Polewczyk, A., Smulek, W. dan Antczak, T. (2021a). Biosurfactant from endophytic *Bacillus pumilus* 2A: physicochemical characterization, production and optimization and potential for plant growth promotion. *Microbial Cell Factories*, 20(1). <https://doi.org/10.1186/s12934-021-01533-2>
- Marchut-Mikołajczyk, O., Drożdżyński, P., Polewczyk, A., Smulek, W. dan Antczak, T. (2021b). Biosurfactant from endophytic *Bacillus pumilus* 2A: physicochemical characterization, production and optimization and potential for plant growth promotion. *Microbial Cell Factories*, 20(1), 40. hlm. <https://doi.org/10.1186/s12934-021-01533-2>
- Master, N. G., Markande, A. R. dan Patel, J. K. (2024). Comparative negation of amphiphile production using nutrition factors: Amyloids versus biosurfactants. *International Journal of Biological Macromolecules*, 265. <https://doi.org/10.1016/j.ijbiomac.2024.130909>
- Mishra, S., Chattopadhyay, A., Naaz, S., Ghosh, A. K., Das, A. R. dan Bandyopadhyay, D. (2019). Oleic acid ameliorates adrenaline induced dysfunction of rat heart mitochondria by binding with adrenaline: An isothermal titration calorimetry study. *Life Sciences*, 218, 96–111. hlm. <https://doi.org/10.1016/j.lfs.2018.12.035>
- Moghal, M. M., Ladniya, V. dan Pradhan, V. (2016). Gas Chromatography-Mass Spectroscopy analysis of oil extracted from freshwater edible crab (*Barytelphusa cunicularis*). *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 7(4), 1840–1847. hlm. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84991735230&partnerID=40&md5=30fcb0ae2c91b1d9127048ee725d5963>
- Mohanty, S. S., Koul, Y., Varjani, S., Pandey, A., Ngo, H. H., Chang, J. S., Wong, J. W. C. dan Bui, X. T. (2021). A critical review on various feedstocks as sustainable substrates for biosurfactants production: a way towards cleaner production. Dalam *Microbial Cell Factories* (Vol. 20, Nomor 1). BioMed Central Ltd. <https://doi.org/10.1186/s12934-021-01613-3>
- Moutinho LF, Moura FR, Silvestre RC dan Romão-Dumaresq AS. (2021). Microbial biosurfactants: A broad analysis of properties, applications, biosynthesis, and techno-economical assessment of rhamnolipid production. *Biotechnol Prog*, 37(2). <https://doi.org/10.1002/btpr.3093>
- Mtui, H. I., Wang, W., Yang, S. Z. dan Mu, B. Z. (2026). Structural diversity and properties of bio-based surfactants with their potential applications. Dalam *Bioresource Technology* (Vol. 440). Elsevier Ltd. <https://doi.org/10.1016/j.biortech.2025.133509>

- Munteanu, I. G. dan Apetrei, C. (2021a). Analytical methods used in determining antioxidant activity: A review. Dalam *International Journal of Molecular Sciences* (Vol. 22, Nomor 7). MDPI AG. <https://doi.org/10.3390/ijms22073380>
- Munteanu, I. G. dan Apetrei, C. (2021b). Analytical methods used in determining antioxidant activity: A review. Dalam *International Journal of Molecular Sciences* (Vol. 22, Nomor 7). MDPI AG. <https://doi.org/10.3390/ijms22073380>
- Myers, D. (2022). *Surfactant Science and Technology* (I. John Wiley & Sons, Ed.; 4 ed.). John Wiley & Sons, Inc.
- Nair, D. N. dan Padmavathy, S. (2014). Impact of endophytic microorganisms on plants, environment and humans. Dalam *The Scientific World Journal* (Vol. 2014). <https://doi.org/10.1155/2014/250693>
- Ntshingila, N. P., Jimoh, A. A. dan Lin, J. (2022). Production and characterisation of a biosurfactant based on *Acinetobacter* sp. V2 and its potential use for environmental applications. *International Journal of Environmental Studies*, 79(6), 1099–1122. hlm. <https://doi.org/10.1080/00207233.2021.1977535>
- Nurfarahin, A. H., Mohamed, M. S. dan Phang, L. Y. (2018). Culture medium development for microbial-derived surfactants production—an overview. Dalam *Molecules* (Vol. 23, Nomor 5). MDPI AG. <https://doi.org/10.3390/molecules23051049>
- Olivera, N. L. dan Nievas, M. L. (2011). Biosurfactants and their uses in the petroleum industry and hydrocarbon pollution remediation. Dalam *Detergents: Types, Components and Uses* (1–48. hlm.). <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009678462&partnerID=40&md5=04bfa80b438d068be3965925acf566ca>
- Onwosi, C. dan Odibo, F. (2012). Effects of carbon and nitrogen sources on rhamnolipid biosurfactant production by *Pseudomonas nitroreducens* isolated from soil. *World journal of microbiology & biotechnology*, 28, 937–942. hlm. <https://doi.org/10.1007/s11274-011-0891-3>
- Orozco-Mosqueda, Ma. del C. dan Santoyo, G. (2021). Plant-microbial endophytes interactions: Scrutinizing their beneficial mechanisms from genomic explorations. *Current Plant Biology*, 25, 100189. hlm. <https://doi.org/https://doi.org/10.1016/j.cpb.2020.100189>
- Panatula, N., Guntuku, G., Palla, M. S., Muthyala, M. K. K., Meka, M. dan Jagadeeswara Reddy, D. (2024). Isolation, Screening and Identification of Biosurfactant Producing Strain *Nocardiosis dassonvillei* var B2 From Oil

- Contaminated Soil. *Journal of Basic Microbiology*, 64(12).
<https://doi.org/10.1002/jobm.202400504>
- Pang, A. P., Wang, Y., Zhang, T., Gao, F., Shen, J. dong, Huang, L., Zhou, J., Zhang, B., Liu, Z. Q. dan Zheng, Y. G. (2024). Highly efficient production of rhamnolipid in *P. putida* using a novel sacB-based system and mixed carbon source. *Bioresource Technology*, 394.
<https://doi.org/10.1016/j.biortech.2023.130220>
- Parmar, R., Varsani, V., Mehta, D., Dudhagara, D., Gamit, S., Nandaniya, N., Chaun, D., Vala, A., Patel, A. dan Vyas, S. (2025). Biosurfactants production from plant-based saponin: Extraction and innovative applications & sustainable aspect for future commercialization. *Renewable and Sustainable Energy Reviews*, 219, 115838. hlm.
<https://doi.org/https://doi.org/10.1016/j.rser.2025.115838>
- Pathania, A. S. dan Jana, A. K. (2020). Improvement in Production of Rhamnolipids Using Fried Oil with Hydrophilic Co-substrate by Indigenous *Pseudomonas aeruginosa* NJ2 and Characterizations. *Applied Biochemistry and Biotechnology*, 191(3), 1223–1246. hlm. <https://doi.org/10.1007/s12010-019-03221-9>
- Patil, V. M., Noronha, V., Joshi, A., Muddu, V. K., Dhumal, S., Arya, S., Juvekar, S., Pai, P., Chatturvedi, P., Devendra, A. C., Ghosh, S., D’cruz, A. dan Kumar, P. (2014). Weekly chemotherapy as Induction chemotherapy in locally advanced head and neck cancer for patients ineligible for 3 weekly maximum tolerable dose chemotherapy. *Indian Journal of Cancer*, 51(1), 20–24. hlm. <https://doi.org/10.4103/0019-509X.134608>
- Patowary, K., Patowary, R., Kalita, M. C. dan Deka, S. (2017). Characterization of biosurfactant produced during degradation of hydrocarbons using crude oil as sole source of carbon. *Frontiers in Microbiology*, 8(FEB). <https://doi.org/10.3389/fmicb.2017.00279>
- Perfumo, A., Smyth, T. J. P., Marchant, R. dan Banat, I. M. (2010). Production and Roles of Biosurfactants and Bioemulsifiers in Accessing Hydrophobic Substrates. Dalam K. N. Timmis (Ed.), *Handbook of Hydrocarbon and Lipid Microbiology* (1501–1512. hlm.). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-77587-4_103
- Roy, A., Khan, M. R. dan Mukherjee, A. K. (2025). Statistical optimization of production and characterization of biosurfactant produced by *Lactobacillus plantarum* JBC5 strain in a ghee (clarified butter) medium: Assessment of its antimicrobial activity and stain removal property. *Process Biochemistry*, 158, 129–139. hlm. <https://doi.org/10.1016/j.procbio.2025.08.015>

- Ruseva, N., Bakalova, A. dan Cherneva, E. (2025). FUNCTIONAL GROUPS AND STRUCTURAL FEATURES OF ANTIOXIDANTS: A REVIEW. *Journal of Chemical Technology and Metallurgy*, 60(6), 881–912. hlm. <https://doi.org/10.59957/jctm.v60.i6.2025.1>
- Sambanthamoorthy, K., Feng, X., Patel, R., Patel, S. dan Parnavitana, C. (2014). Antimicrobial and antibiofilm potential of biosurfactants isolated from lactobacilli against multi-drug-resistant pathogens. *BMC Microbiology*, 14(1). <https://doi.org/10.1186/1471-2180-14-197>
- Samykanu, M. dan Achary, A. (2017). Utilization of Agro-Industry Residue for Rhamnolipid Production by *P. aeruginosa* AMB AS7 and Its Application in Chromium Removal. *Applied Biochemistry and Biotechnology*, 183(1), 70–90. hlm. <https://doi.org/10.1007/s12010-017-2431-6>
- Sana, S., Datta, S., Biswas, D. dan Sengupta, D. (2018). Assessment of synergistic antibacterial activity of combined biosurfactants revealed by bacterial cell envelop damage. *Biochimica et Biophysica Acta (BBA) - Biomembranes*, 1860(2), 579–585. hlm. <https://doi.org/https://doi.org/10.1016/j.bbamem.2017.09.027>
- Santos, D. K. F., Rufino, R. D., Luna, J. M., Santos, V. A. dan Sarubbo, L. A. (2016). Biosurfactants: Multifunctional biomolecules of the 21st century. Dalam *International Journal of Molecular Sciences* (Vol. 17, Nomor 3). MDPI AG. <https://doi.org/10.3390/ijms17030401>
- Sarubbo, L. A., Silva, M. da G. C., Durval, I. J. B., Bezerra, K. G. O., Ribeiro, B. G., Silva, I. A., Twigg, M. S. dan Banat, I. M. (2022). Biosurfactants: Production, properties, applications, trends, and general perspectives. *Biochemical Engineering Journal*, 181, 108377. hlm. <https://doi.org/https://doi.org/10.1016/j.bej.2022.108377>
- Shahabi Rokni, M., Halajnia, A., Lakzian, A. dan Housaindokht, M. R. (2024). Sugar beet molasses bioconversion into biosurfactant: optimization and comparison with other carbon sources. *Biomass Conversion and Biorefinery*, 14(21), 27293–27305. hlm. <https://doi.org/10.1007/s13399-022-03597-5>
- Sharma, J., Sundar, D. dan Srivastava, P. (2021). Biosurfactants: Potential Agents for Controlling Cellular Communication, Motility, and Antagonism. Dalam *Frontiers in Molecular Biosciences* (Vol. 8). Frontiers Media S.A. <https://doi.org/10.3389/fmolb.2021.727070>
- Singh, A. K., Rautela, R. dan Cameotra, S. S. (2014). Substrate dependent in vitro antifungal activity of *Bacillus* sp strain AR2. *Microbial Cell Factories*, 13(1). <https://doi.org/10.1186/1475-2859-13-67>

- Smyth, T. J. P., Perfumo, A., Marchant, R. dan Banat*, I. M. (2010). Isolation and Analysis of Low Molecular Weight Microbial Glycolipids. Dalam *Handbook of Hydrocarbon and Lipid Microbiology* (3705–3723. hlm.). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-77587-4_291
- Sonbhadra, S. dan Pandey, L. M. (2025). Isolation, identification, and characterization of *Bacillus subtilis* SMP-2 from panitenga and exploring its potential for biosurfactant production. *Food and Bioprocess Processing*, 149, 144–157. hlm. <https://doi.org/https://doi.org/10.1016/j.fbp.2024.11.018>
- Sun, M. dan Mu, X. (2023). Vibration Spectrum Calculation and Analysis. Dalam *SpringerBriefs in Applied Sciences and Technology: Vol. Part F1478* (65–78. hlm.). https://doi.org/10.1007/978-981-99-4732-4_4
- Tancredi, M., Carandente Coscia, C., Russo Krauss, I. dan D’Errico, G. (2025). Antioxidant Properties of Biosurfactants: Multifunctional Biomolecules with Added Value in Formulation Chemistry. Dalam *Biomolecules* (Vol. 15, Nomor 2). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/biom15020308>
- Thaniyavarn, J., Chongchin, A., Wanitsuksombut, N., Thaniyavarn, S., Pinphanichakarn, P., Leepipatpiboon, N., Morikawa, M. dan Kanaya, S. (2006). Biosurfactant production by *Pseudomonas aeruginosa* A41 using palm oil as carbon source. *The Journal of general and applied microbiology*, 52, 215–222. hlm. <https://doi.org/10.2323/jgam.52.215>
- Uzoigwe, C., Burgess, J. G., Ennis, C. J. dan Rahman, P. K. S. M. (2015). Bioemulsifiers are not biosurfactants and require different screening approaches. Dalam *Frontiers in Microbiology* (Vol. 6, Nomor APR). Frontiers Research Foundation. <https://doi.org/10.3389/fmicb.2015.00245>
- Varjani, S. J. dan Upasani, V. N. (2017). Critical review on biosurfactant analysis, purification and characterization using rhamnolipid as a model biosurfactant. Dalam *Bioresource Technology* (Vol. 232, 389–397. hlm.). Elsevier Ltd. <https://doi.org/10.1016/j.biortech.2017.02.047>
- Wei, M. ping, Yu, H., Guo, Y. hui, Cheng, Y. liang, Xie, Y. fei dan Yao, W. rong. (2022). Synergistic antibacterial combination of Sapindoside A and B changes the fatty acid compositions and membrane properties of *Cutibacterium acnes*. *Microbiological Research*, 255. <https://doi.org/10.1016/j.micres.2021.126924>
- Wiegand, I., Hilpert, K. dan Hancock, R. E. W. (2008). Agar and broth dilution methods to determine the minimal inhibitory concentration (MIC) of antimicrobial substances. *Nature Protocols*, 3(2), 163–175. hlm. <https://doi.org/10.1038/nprot.2007.521>

- Wołosiak, R., Drużyńska, B., Derewiaka, D., Piecyk, M., Majewska, E., Ciecierska, M., Worobiej, E. dan Pakosz, P. (2022). Verification of the conditions for determination of antioxidant activity by abts and dpsh assays—a practical approach. *Molecules*, 27(1). <https://doi.org/10.3390/molecules27010050>
- Wu, T., Xu, J., Liu, J., Guo, W.-H., Li, X.-B., Xia, J.-B., Xie, W. J., Yao, Z. G., Zhang, Y. M. dan Wang, R.-Q. (2019). Characterization and initial application of endophytic *Bacillus safensis* strain ZY16 for improving phytoremediation of oil-contaminated saline soils. *Frontiers in Microbiology*, 10(MAY). <https://doi.org/10.3389/fmicb.2019.00991>
- Wyrwas, B. dan Zgoła-Grześkowiak, A. (2014). Continuous flow methylene blue active substances method for the determination of anionic surfactants in river water and biodegradation test samples. *Journal of Surfactants and Detergents*, 17(1), 191–198. hlm. <https://doi.org/10.1007/s11743-013-1469-x>
- Xia, W. J., Luo, Z. Bin, Dong, H. P., Yu, L., Cui, Q. F. dan Bi, Y. Q. (2012). Synthesis, characterization, and oil recovery application of biosurfactant produced by indigenous *Pseudomonas aeruginosa* WJ-1 using waste vegetable oils. *Applied Biochemistry and Biotechnology*, 166(5), 1148–1166. hlm. <https://doi.org/10.1007/s12010-011-9501-y>
- Xue, L. L., Chen, H. H. dan Jiang, J. G. (2017). Implications of glycerol metabolism for lipid production. Dalam *Progress in Lipid Research* (Vol. 68, 12–25. hlm.). Elsevier Ltd. <https://doi.org/10.1016/j.plipres.2017.07.002>
- Yong, S., Ng, C. Y., Liu, H., Chen, Y., Liu, Q., Teo, T. L., Loh, T. P. dan Sethi, S. K. (2024). Expedient measurement of total protein in human serum and plasma via the biuret method using fiber optic probe for patient samples and certified reference materials. *Analytical and Bioanalytical Chemistry*, 416(28), 6611–6620. hlm. <https://doi.org/10.1007/s00216-024-05561-w>
- Yoon, B. K., Jackman, J. A., Valle-González, E. R. dan Cho, N. J. (2018). Antibacterial free fatty acids and monoglycerides: Biological activities, experimental testing, and therapeutic applications. Dalam *International Journal of Molecular Sciences* (Vol. 19, Nomor 4). MDPI AG. <https://doi.org/10.3390/ijms19041114>
- Zhao, X., Jiang, M., Du, T., Liu, X., Luo, J., Guo, Y., Li, X., Wang, H., Wei, S. dan Yu, L. (2026). Physicochemical and Functional Characterizations of Biosurfactants Produced by *Pseudomonas aeruginosa* N33 for Oil Removal. *Microorganisms*, 14(1), 142. hlm. <https://doi.org/10.3390/microorganisms14010142>
- Zheng, K., Wu, L., He, Z., Yang, B. dan Yang, Y. (2017). Measurement of the total protein in serum by biuret method with uncertainty evaluation. *Measurement*:

Journal of the International Measurement Confederation, 112, 16–21. hlm.
<https://doi.org/10.1016/j.measurement.2017.08.013>

Zhou, Z., Liu, F., Zhang, X., Zhou, X., Zhong, Z., Su, H., Li, J., Li, H., Feng, F., Lan, J., Zhang, Z., Fu, H., Hu, Y., Cao, S., Chen, W., Deng, J., Yu, J., Zhang, W. dan Peng, G. (2018). Cellulose-dependent expression and antibacterial characteristics of surfactin from *Bacillus subtilis* HH2 isolated from the giant panda. *PLoS ONE*, 13(1). <https://doi.org/10.1371/journal.pone.0191991>

Zhu, Z., Wen, Y., Yi, J., Cao, Y., Liu, F. dan McClements, D. J. (2019). Comparison of natural and synthetic surfactants at forming and stabilizing nanoemulsions: Tea saponin, Quillaja saponin, and Tween 80. *Journal of Colloid and Interface Science*, 536, 80–87. hlm.
<https://doi.org/https://doi.org/10.1016/j.jcis.2018.10.024>