

## DAFTAR PUSTAKA

- Abasa, S., Pancasakti Makassar, U., & Ishak, P. (2023). *Acute Toxicity Test The Ethanol Extract Of The Senggani leaves (Melastroma polyanthum Bl.) Against Shrimp (Artemia salina Leach ) with the method Brine Shrimp Lethality Test (BSLT)*. 2(1), 2830–7070.
- Abol-fotouh, D., Alhagar, O. E. A., & Hassan, M. A. (2021). Optimization, purification, and biochemical characterization of thermoalkaliphilic lipase from a novel Geobacillus stearothermophilus FMR12 for detergent formulations. *International Journal of Biological Macromolecules*, 181, 125–135. <https://doi.org/10.1016/j.ijbiomac.2021.03.111>
- Abou, M., Gomaa, S. K., Wahba, M. I., Zaki, R. A., El-fiky, A. F., El-refai, H. A., & El-sayed, H. (2022). Bioscouring of wool fibres using immobilized thermophilic lipase Marwa. *International Journal of Biological Macromolecules*, 194(September 2021), 800–810. <https://doi.org/10.1016/j.ijbiomac.2021.11.128>
- Abro, A. A., Qureshi, A. S., Naqvi, M., Khushk, I., Jatt, A. N., Ali, C. H., Makhdoom, F., & Shafaq, U. (2024). Lipase Production from alkalophilic-thermophilic-Ionic liquid tolerant Bacillus cereus using agricultural residues for its applications in biodiesel and detergents. *Industrial Crops and Products*, 220(July), 119208. <https://doi.org/10.1016/j.indcrop.2024.119208>
- Adriana, A. N. I. (2023). Uji Lc50 Ekstrak Batang Akar Kuning (Arcangelisia Flava Merr) Terhadap Larva Udang (Arthemia Salina Leach) Dengan Metode BSLT (Brine Shrimp Lethality Test). *Pharmacology And Pharmacy Scientific Journals*, 2(2), 68–74. <https://doi.org/10.51577/papsjournals.v2i2.460>
- Agustini, R. S. and R. (2021). *Seed Lipases And Its Characterization*. 10(2), 168–183.
- Andriwibowo. (2021). *PEMODELAN BIODIVERSITAS, FAKTOR LINGKUNGAN, DAN POTENSI HABITAT BAKTERI TERMOFILIK FIRMICUTES PADA EKOSISTEM GEOTERMAL DAN SUMBER AIR PANAS DI JAWA BARAT*. Asnawi 2006, 84–91.
- Anggraeni, A., & Triajie, H. (2021). ABILITY TEST OF BACTERIA (*Pseudomonas aeruginosa*) IN BIODEGRADATION PROCESS OF LEAD HEAVY METAL (Pb) Pollution, IN EAST KAMAL WATERS, BANGKALAN REGENCY. *Juvenil:Jurnal Ilmiah Kelautan Dan Perikanan*, 2(3), 176–185. <https://doi.org/10.21107/juvenil.v2i3.11754>
- Armaleni, Nasir, N., & Agustin, A. (2019). Antagonist of Indigenous *Pseudomonas fluorescens* against *Ralstonia solanacearum* in Tomato (*Lycopersicum esculentum*). *Jurnal Metamorfosa*, 6(1), 119–122. <https://ojs.unud.ac.id/index.php/metamorfosa/article/view/47294>
- Arteaga-Ríos, I. G., Méndez-Rodríguez, K. B., Ocampo-Pérez, R., Guerrero-González, M. de la L., Rodríguez-Guerra, R., & Delgado-Sánchez, P. (2025). Evaluation and identification of metabolites produced by *Cytobacillus firmus* in the interaction with *Arabidopsis thaliana* plants and their effect on *Solanum lycopersicum*. *Current Research in Microbial Sciences*, 8(November 2024). <https://doi.org/10.1016/j.crmicr.2024.100312>
- Asjayani Kurnia Sari, Winni Astuti, dan D. R. P. (2020). *Skrining Lipase dari Isolat Bakteri Endofit Batang Pacing ( Costus speciosus ( J . Koenig ) Sm ) dan Penentuan Kondisi Kerja Optimumnya Screening Lipase From Endophytic Bacteria From Steam of Pacing*

(*Costus speciosus (J. Koenig) Sm*) and Determination. 05(1), 1–5.

Bhatt, H. B., Sani, R. K., Amoozegar, M. A., & Singh, S. P. (2024). Editorial : *Extremozymes : characteristics , structure , protein engineering and applications.*

Chanos, B., & Parsial, P. (2025). *Ekstraksi Dan Karakterisasi Enzim Tripsin Dari Jeroan Ikan Bandeng (Chanos Chanos) Hasil Purifikasi Parsial.* 28.

Cico Jhon Karunia Simamora1, S. S. (2020). *Identifikasi dan Karakterisasi Aktivitas Ekstrak Kasar Enzim Lipase Isolat Bakteri Lipolitik Lptk 19 Asal Tempe Biji Karet.* 12, 28–37.

Du, M., Hou, Z., Liu, L., Xuan, Y., Chen, X., Fan, L., Li, Z., & Xu, B. (2022). Progress, applications, challenges and prospects of protein purification technology. *Frontiers in Bioengineering and Biotechnology,* 10(December), 1–26. <https://doi.org/10.3389/fbioe.2022.1028691>

El-sayed, M. H., Elsayed, D. A., & Gomaa, A. E. F. (2024). *Nocardiopsis synnemataformans an extremophilic actinomycete producing extremozyme cellulase , using lignocellulosic agro-wastes and its biotechnological applications* (Vol. 10, Issue March). <https://doi.org/10.3934/microbiol.2024010>

Fathurohman, M., Sukmawan, Y. P., Fauzi, M. R., Tri, A., & Pratita, K. (2021). Isolasi Biomaterial Silika dari Mikroalga Autotrofik dengan Variasi Air Laut Buatan. *Prosiding Seminar Nasional Diseminasi Penelitian,* 1(1), 201–208.

Fatimah, E. (2021). *Review Article: The Characterization And Role Of Lipase Enzyme In The Production Of Diacylycerol (DAG) From Virgin Coconut Oil (VCO).* 10(3), 246–256.

Gesit Savana, A., Retno Febriyanti, D., Wafiq Azizah, N., Fitriansyah, F., Sofiyah, N., & Matematika dan Ilmu Pengetahuan Alam, F. (2024). Potential Test of Antimicrobial Compounds at Plants by Welldiffusion and Paper Disk Difusion. *Era Sains : Journal of Science, Engineering and Information Systems Research,* 2(1), 15–21.

Gunawan, G. M., Suhendar, D., Sundari, C. D. D., Ivansyah, A. L., Setiadji, S., & Rohmatulloh, Y. (2019). Sintesis Zeolit Silikalit-1 Menggunakan Limbah Tongkol Jagung sebagai Sumber Silika. *Al-Kimiya,* 4(2), 91–99. <https://doi.org/10.15575/ak.v4i2.5089>

Idiawati, N., Adelita, K., & Juane Sofiana, M. S. (2019). Pelapisan Aktivitas Lipase Dari Bakteri Sedimen Perairan Pulau Lemukutan. *Jurnal Enggano,* 4(1), 65–71. <https://doi.org/10.31186/jenggano.4.1.65-71>

Julianti, E., Fathurohman, M., Damayanti, S., & Kartasasmita, R. E. (2018). Isolate of Heterotrophic Microalgae As a Potential Source for Docohexaenoic Acid (Dha). *Marine Research in Indonesia,* 43(2), 79–84. <https://doi.org/10.14203/mri.v43i2.264>

Khan, S. S., Verma, V., & Rasool, S. (2023). Purification and characterization of lipase enzyme from endophytic *Bacillus pumilus* WSS5 for application in detergent industry. *Biocatalysis and Agricultural Biotechnology,* 50(October 2022), 102681. <https://doi.org/10.1016/j.bcab.2023.102681>

Laksanawati, T. A., Khirzin, M. H., & Shinta, K. M. (2022). Pemurnian Dan Uji Aktivitas Protease Sulfihidril Batang Kamboja (*Plumeria obusta*). *Agribios,* 20(2), 235. <https://doi.org/10.36841/agribios.v20i2.2232>

Latifah, D. S., Tirtasari, K., Atma, C. D., & Agustin, A. L. D. (2021). Deteksi Residu

Antibiotik Oksitetrasiklin Pada Hati Ayam Broiler Di Pasar Tradisional Kota Mataram. *Mandalika Veterinary Journal*, 1(2), 1. <https://doi.org/10.33394/mvj.v1i2.4250>

Layly, I. R., Widyasti, E., Waltam, D. R., Mufti, A., Wiguna, N., & Trismilah, T. (2020). Isolasi Mikroorganisme Potensial Penghasil Lipase dari Limbah Pengolahan Minyak Kelapa Sawit Malinping. *Al-Kauniyah: Jurnal Biologi*, 13(2), 228–241. <https://doi.org/10.15408/kauniyah.v13i2.14699>

Li, X., Morita, S., Yamada, H., Koga, K., Ota, W., Furuta, T., Yamatsu, A., & Kim, M. (2022). Free Linoleic Acid and Oleic Acid Reduce Fat Digestion and Absorption In Vivo as Potent Pancreatic Lipase Inhibitors Derived from Sesame Meal. *Molecules*, 27(15). <https://doi.org/10.3390/molecules27154910>

Machado, D. T., Dias, C., Cayô, R., Gales, A. C., Carvalho, F. M. De, & Tereza, A. (2024). *Uncovering new Firmicutes species in vertebrate hosts through metagenome-assembled genomes with potential for sporulation*. August, 1–25.

Mangunwardoyo, W., Lusini, Y., & Gandjar, I. (2009). Karakterisasi, Pengaruh Sumber Nitrogen dan Karbon terhadap Produktivitas Enzim Lipase Rhizopus microsporus var oligosporus UICC 550 Partial Characterization, Effect of Nitrogen and Carbon Sources on Production of Lipase of Rhizopus microsporus var oligos. *Biota*, 14(2), 115–124.

Masi, C., Tebiso, A., & Selva Kumar, K. V. (2023). Isolation and characterization of potential multiple extracellular enzyme-producing bacteria from waste dumping area in Addis Ababa. *Heliyon*, 9(2), e12645. <https://doi.org/10.1016/j.heliyon.2022.e12645>

Muhammad Kemal Rafif, & Alfinna Mahya Ummati. (2023). Pengaruh pasang surut air laut terhadap kekuatan beton komposit material Ground Granulated Blast Furnace Slag (GGBFS). *PADURAKSA: Jurnal Teknik Sipil Universitas Warmadewa*, 12(2), 218–227. <https://doi.org/10.22225/pd.12.2.6518.218-227>

Mukhtar, A. M. Al, Sudyana, I. N., & Rosmainar, L. (2024). Humic Acid-Fe<sub>3</sub>O<sub>4</sub> Synthesis from Central Kalimantan Peat as Magnetic Adsorbent of Congo Red Dyestuff Waste. *Jurnal Cendekia Kimia*, 02(02), 82–93.

Nadea, N. S. W. P., Indrayati, A., & Leviana, F. (2023). Potensi Ekstrak Kasar Enzim dari Tempe Kedelai Hitam (Glycine soja (L.) Merr.) sebagai Obat Fibrinolitik Alami dengan Metode Clot Lysis In Vitro. *Jurnal Sains Dan Kesehatan*, 5(2), 115–125. <https://doi.org/10.25026/jsk.v5i2.1712>

Najar, I. N., & Thakur, N. (2020). *A systematic review of the genera Geobacillus and Parageobacillus : their evolution , current taxonomic status and major applications*. April, 800–816. <https://doi.org/10.1099/mic.0.000945>

Nasution, S. H., Astuti, W., & Kartika, R. (2019). Pengaruh logam terhadap aktivitas lipase dari isolat bakteri halofilik pada air laut muara badak. *Jurnal Atomik*, 4(2), 56–58.

O'Flynn, B. G., & Mittag, T. (2021). The role of liquid–liquid phase separation in regulating enzyme activity. *Current Opinion in Cell Biology*, 69, 70–79. <https://doi.org/10.1016/j.ceb.2020.12.012>

Pometia, J. R., Forst, G., Dangeubun, E. J., Katja, D. G., Kumaunang, M., & Ratulangi, U. S. (2022). *Sifat Toksisitas Dan Kemampuan Penghambatan Enzim A-Amilase Dari Ekstrak Biji Buah Matoa*. 15(1), 1–8.

Rahmadhani, N., Astuti, R. I., & Meryandini, A. (2020). Substrate utilization of

ethanologenic yeasts co-cultivation of Pichia kudriavzevii and Saccharomyces cerevisiae. *IOP Conference Series: Earth and Environmental Science*, 457(1). <https://doi.org/10.1088/1755-1315/457/1/012072>

Rahman, F. A., Safni, I., & Lisnawita, L. (2023). Kelimpahan Jamur Non-Patogenik Pada Rhizosfer Daerah Endemik Patogen Magnaporthe grisea Penyebab Penyakit Blas Pada Tanaman Padi (*Oryza sativa* L.). *Agro Bali: Agricultural Journal*, 6(2), 395–404. <https://doi.org/10.37637/ab.v6i2.1145>

Ramani, S., Recharla, N., Hwang, O., Jeong, J., & Park, S. (2021). Meta-analysis identifies the effect of dietary multi-enzyme supplementation on gut health of pigs. *Scientific Reports*, 11(1), 1–12. <https://doi.org/10.1038/s41598-021-86648-7>

Sharah, A., Karnila, R., & Desmelati, D. (2015). Pembuatan Kurva Pertumbuhan Bakteri Asam Laktat yang di Isolasi dari Ikan Peda Kembung (*Rastrelliger* sp.). *Jom (Jurnal Online Mahasiswa)*, 2(2), 1–8.

Sheira Rait, A., & Bahri, S. (2022). Pemurnian Parsial Enzim Lipase dari Bakteri Isolat Lokal LKMA3 dan Penentuan Aktivitasnya dengan Metode Spektrofotometri. *Prosiding*, 1–5.

Shi, Y. W., Niu, X. X., Yang, H. M., Chu, M., Wang, N., Bao, H. F., Zhan, F. Q., Yang, R., & Lou, K. (2024). Optimization of the fermentation media and growth conditions of *Bacillus velezensis* BHZ-29 using a Plackett–Burman design experiment combined with response surface methodology. *Frontiers in Microbiology*, 15(April), 1–16. <https://doi.org/10.3389/fmicb.2024.1355369>

Soleymani, S., Alizadeh, H., Mohammadian, H., Rabbani, E., Moazen, F., Sadeghi, H. M., Shariat, Z. S., Etemadifar, Z., & Rabbani, M. (2017). Efficient media for high lipase production: One variable at a time approach. *Avicenna Journal of Medical Biotechnology*, 9(2), 82–86.

Stathopoulou, P. M., Savvides, A. L., Karagouni, A. D., & Hatzinikolaou, D. G. (2013). Unraveling the lipolytic activity of thermophilic bacteria isolated from a volcanic environment. *BioMed Research International*, 2013. <https://doi.org/10.1155/2013/703130>

Stemler, C. D., Lorenz, K. K., & Scherf, K. A. (2024). Rhodamine B-based lipase activity assay with natural substrates—development and application. *International Journal of Food Science and Technology*, 59(2), 1063–1070. <https://doi.org/10.1111/ijfs.16875>

Sukma Dytho, M., & Sutrisna, E. M. (2021). Potensi jati Belanda (*Guazuma ulmifolia*) sebagai terapi herbal untuk kanker: studi literatur. *University Research Collowium*, 129–137.

Suyanto, E., Soetarto, E. S., & Cahyanto, M. N. (2015). Produk Lipase Kapang Lipolitik pada Limbah Ampas Kelapa. *Bioeksperimen: Jurnal Penelitian Biologi*, 1(1), 12–17. <https://doi.org/10.23917/bioeksperimen.v1i1.311>

Umbi, M., Jalar, U. B. I., & Ipomoea, P. (2024). Pembuatan Media Pertumbuhan Bakteri *Escherichia Coli* Dengan Menggunakan Umbi Ubi Jalar Putih *Ipomoea Batatas*. 3(3), 77–83.

Ummah, M. S. (2019). Microbiology. In *Sustainability (Switzerland)* (Vol. 11, Issue 1). <http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.>

06.005%0Ahttps://www.researchgate.net/publication/305320484\_SISTEM PEMBETU NGAN TERPUSAT STRATEGI MELESTARI

Wahyuni, S., Amin, T. S., Daulay, A. S., & Zebua, M. Z. (2021). Eksplorasi dan Identifikasi Mikroba Penghasil Enzim Amilase dan Lipase dari Olahan Produk Makanan dan Minuman. *Prosiding Seminar Hasil Penelitian*, 339–345.

Wardani, N. P., Poernomo, A. T., & Isnaeni, I. (2021). Optimasi Kondisi Fermentasi pada Produksi Metabolit Antibakteri dari *Bacillus tequilensis* BSMF Simbiotik *Halichondria panicea*. *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia*, 8(2), 187. <https://doi.org/10.20473/jfiki.v8i22021.187-193>

Wilapangga, A., & Syaputra, S. (2018). Analisis Antibakteri Metode Agar Cakram Dan Uji Toksisitas Menggunakan Bslt ( Brine Shrimp Lethality Test) Dari Ekstrak Metanol Daun Salam (*Eugenia Polyantha*). *Indonesian Journal of Biotechnology and Biodiversity*, 2(2), 50–56.

Yulistia, S., & Parbuntari, H. (2024). Identifikasi dan Kuantifikasi Kadar Protein pada Putih Telur Bebek (*Anas domesticus*). *Journal of Multidisciplinary Inquiry in Science, Technology and Educational Research*, 1(4), 1911–1917.