

DAFTAR PUSTAKA

- Aijuka, M., & Buys, E. M. (2019). Persistence of foodborne diarrheagenic *Escherichia coli* in the agricultural and food production environment: Implications for food safety and public health. *Food Microbiology*, 82, 363–370. <https://doi.org/10.1016/j.fm.2019.03.018>
- Bharadishettar, N., Bhat K, U., & Panemangalore, D. B. (2021). Coating technologies for copper based antimicrobial active surfaces: A perspective review. *Metals*, 11(5). <https://doi.org/10.3390/met11050711>
- Borlaf, M., & Moreno, R. (2021). Colloidal sol-gel: A powerful low-temperature aqueous synthesis route of nanosized powders and suspensions. *Open Ceramics*, 8. <https://doi.org/10.1016/j.oceram.2021.100200>
- Bose, S., Sarkar, N., & Jo, Y. (2024). Natural medicine delivery from 3D printed bone substitutes. *Journal of Controlled Release*, 365, 848–875. <https://doi.org/10.1016/j.jconrel.2023.09.025>
- Brady, J., Drig, T., Lee, P. I., & Li, J. X. (2017). Polymer properties and characterization. Dalam *Developing Solid Oral Dosage Forms: Pharmaceutical Theory and Practice: Second Edition* (hlm. 181–223). Elsevier Inc. <https://doi.org/10.1016/B978-0-12-802447-8.00007-8>
- Di Giuseppe, E. (2018). Analogue Materials in Experimental Tectonics. Dalam *Reference Module in Earth Systems and Environmental Sciences*. Elsevier. <https://doi.org/10.1016/b978-0-12-409548-9.10909-1>
- Doungdej, K., Numpilai, T., Dolsirittigul, N., Polsomboon, N., Limphirat, W., Sudsakorn, K., Seubsai, A., Roddech, S., Chareonpanich, M., & Witoon, T. (2025). Tuning Cu-support interactions via hydroxyethyl cellulose-templated silica for enhanced reverse water-gas shift catalysis. *Journal of Environmental Chemical Engineering*, 13(5). <https://doi.org/10.1016/j.jece.2025.118913>
- El-Khawaga, A. M., Zidan, A., & El-Mageed, A. I. A. A. (2023). Preparation methods of different nanomaterials for various potential applications: A review. Dalam *Journal of Molecular Structure* (Vol. 1281). Elsevier B.V. <https://doi.org/10.1016/j.molstruc.2023.135148>
- Eweis, A. A., Ahmad, M. S., El Domany, E. B., Al-Zharani, M., Mubarak, M., Eldin, Z., Gadelhak, Y., Mahmoud, R., & Hozzein, W. N. (2024). Actinobacterium-Mediated Green Synthesis of CuO/Zn-Al LDH Nanocomposite Using *Micromonospora* sp. ISP-2 27: A Synergistic Study that

- Enhances Antimicrobial Activity. *ACS Omega*, 9(32), 34507–34529. <https://doi.org/10.1021/acsomega.4c02133>
- Faturachman, G. F., Ramanda, A. A., Maharani, S., Latif, L. A., Belo, G. A. G., & Ayubi, S. G. Al. (2025). Application of Fourier Transform Infrared Spectroscopy (FTIR) for Quantitative Analysis of Pharmaceutical Compounds. *Indonesian Journal of Pharmaceutical Education*, 5(1). <https://doi.org/10.37311/ijpe.v5i1.23309>
- Hawa, L. C., Susilo, B., & Jayasari, N. E. (2011). Studi Komparasi Inaktivasi *Escherichia coli* dan Perubahan Sifat Fisik Pada Pasteurisasi Susu Sapi Segar Menggunakan Metode Pemanasan Dan Tanpa Pemanasan Dengan Kejut Medan Listrik. *Jurnal Teknologi Pertanian*, 12(1), 31–39.
- Hayati, D. D., Herrialfian, H., Isa, M., Darmawi, D., Fakhrurrazi, F., & Harris, A. (2020). Antibacterial Activity of Ethanol Extract of Siamih Leaf (*Ageratum conyzoides*) on *Staphylococcus aureus* bacteria. *Jurnal Medika Veterinaria*, 14(1). <https://doi.org/10.21157/j.med.vet..v14i1.10333>
- Holderman, M. V, de Queljoe, E., Rondonuwu, S. B., Studi Biologi, P., & Universitas Sam Ratulangi Manado, F. (2017). IDENTIFIKASI BAKTERI PADA PEGANGAN ESKALATOR DI SALAH SATU PUSAT PERBELANJAAN DI KOTA MANADO. Dalam *Jurnal Ilmiah Sains* (Vol. 17, Nomor 1).
- Kabakoran, J. F., Niwele, A., & Yuyun, M. (2022). Uji Aktivitas Antibakteri Ekstrak Etanol Daun Turi (*Sesbania grandiflora* L) terhadap Bakteri *Staphylococcus aureus* dengan Metode Cakram. *Jurnal Ilmiah Kedokteran dan Kesehatan*, 1(2). <http://ejurnal.stie-trianandra.ac.id/index.php/klinikHalamanUTAMAJurnal:http://ejurnal.stie-trianandra.ac.id/index.php>
- Khairuddin, Yamin, M., & Kusmiyati. (2021). Analisis Kandungan Logam Berat Tembaga (Cu) pada Bandeng (*Chanos chanos forsk*) yang Berasal dari Kampung Melayu Kota Bima. *Jurnal Pijar Mipa*, 16(1), 97–102. <https://doi.org/10.29303/jpm.v16i1.2257>
- Kipimbob, E., Bara, R., Wowor, P. M., & Posangi, J. (2019). Uji Efek Antibakteri *Chromodoris diana* terhadap Bakteri *Escherichia coli* dan *Staphylococcus aureus*. *Jurnal e-Biomedik*, 7(1), 61.
- Klegerman, M. E. (2017). Quantitative characterization of targeted nanoparticulate formulations for prediction of clinical efficacy. Dalam *Nanoscale Fabrication, Optimization, Scale-up and Biological Aspects of Pharmaceutical*

- Nanotechnology* (hlm. 397–440). Elsevier. <https://doi.org/10.1016/B978-0-12-813629-4.00010-3>
- Konieczny, J., & Rdzawski, Z. (2012). *Antibacterial properties of copper and its alloys*.
- Lestari, D. I. (2018). *Kajian Pengaruh pH dan Lama Penyinaran Terhadap Aktivitas Fotokatalis Beads TiO₂N/Zeolit-Kitosan dan TiO₂/Zeolit-Kitosan Pada Degradasi Limbah Cair Tempe Dengan Sinar UV*. Universitas Brawijaya.
- Liu, T., Ma, M., Ali, A., Liu, Q., Bai, R., Zhang, K., Guan, Y., Wang, Y., Liu, J., & Zhou, H. (2024). Self-assembled copper tannic acid nanoparticles: A powerful nano-bactericide by valence shift of copper. *Nano Today*, 54, 102071. <https://doi.org/10.1016/j.nantod.2023.102071>
- Lyu, R., Zhang, C., Xia, T., Chen, S., Wang, Z., Luo, X., Wang, L., Wang, Y., Yu, J., & Wang, C. W. (2020). Efficient adsorption of methylene blue by mesoporous silica prepared using sol-gel method employing hydroxyethyl cellulose as a template. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 606. <https://doi.org/10.1016/j.colsurfa.2020.125425>
- MacQuarrie, S., & Carrier, A. J. (2019). Organically Tailored Mesoporous Silicates Designed for Heavy Metal Sensing. Dalam *Nanomaterials Design for Sensing Applications* (hlm. 129–152). Elsevier. <https://doi.org/10.1016/B978-0-12-814505-0.00004-7>
- Mahmoudi, P., Akbarpour, M. R., Lakeh, H. B., Jing, F., Hadidi, M. R., & Akhavan, B. (2022). Antibacterial Ti–Cu implants: A critical review on mechanisms of action. Dalam *Materials Today Bio* (Vol. 17). Elsevier B.V. <https://doi.org/10.1016/j.mtbio.2022.100447>
- Miao, K., Luo, X., Wang, W., Guo, J., Guo, S., Cao, F., Hu, Y., Chang, P., & Feng, G. (2019). One-step synthesis of Cu–SBA-15 under neutral condition and its oxidation catalytic performance. *Microporous and Mesoporous Materials*, 289, 109640. <https://doi.org/10.1016/j.micromeso.2019.109640>
- Nabilah, W., Pardoyo, & Azmiyawati, C. (2025). Sintesis Silika Gel-Cu(II) dari Limbah Geothermal dengan Metode Sol-Gel sebagai Antibakteri Escherichia Coli dan Staphylococcus Aureus. *Greensphere: Journal of Environmental Chemistry*, 5(2), 56–61. <https://doi.org/10.14710/gjec.2025.29633>
- Noreen, A., Zia, K. M., Tabasum, S., Khalid, S., & Shareef, R. (2020). A review on grafting of hydroxyethylcellulose for versatile applications. Dalam

- International Journal of Biological Macromolecules* (Vol. 150, hlm. 289–303). Elsevier B.V. <https://doi.org/10.1016/j.ijbiomac.2020.01.265>
- Pednekar, P. P., Godiyal, S. C., Jadhav, K. R., & Kadam, V. J. (2017). Chapter 23 - Mesoporous silica nanoparticles: a promising multifunctional drug delivery system. Dalam *Nanostructures for Cancer Therapy*. <https://doi.org/10.1016/B978-0-323-46144-3/00023-4>
- Pratiwi, P., Suzery, M., & Cahyono, B. (2010). Total Fenolat dan Flavonoid dari Estrak dan Fraksi Daun Kumis Kucing (*Orthosiphon stamineus* B.) Jawa Tengahserta Aktivitas Antioksidanya. *Jurnal Sains & Matematika*, 18.
- Pratiwi, R. D., Utomo, R. B., & Kuswandari, S. (2023). Antibacterial effect of ethanol extract of moringa oleifera seeds against enterococcus faecalis atcc 29212. *Odonto : Dental Journal*, 10(2), 180. <https://doi.org/10.30659/odj.10.2.180-187>
- Prusty, J. S. (2022). Antifungal discovery from plant sources. Dalam *Phytoconstituents and Antifungals* (hlm. 15–33). Elsevier. <https://doi.org/10.1016/B978-0-323-91792-6.00007-8>
- Rock, C., & Donnenberg, M. S. (2014). Human Pathogenic Enterobacteriaceae. Dalam *Reference Module in Biomedical Sciences*. Elsevier. <https://doi.org/10.1016/B978-0-12-801238-3.00136-7>
- Salni, Hanifa, M., & Mukti, R. W. (2011). Isolasi Senyawa Antibakteri Dari Daun Jengkol (*Pithecolobium lobatum* Benth) dan Penentuan Nilai KHM-nya. Dalam *Jurnal Penelitian Sains* (Vol. 1).
- Sharmiladevi, S., Priya, A. S., & Sujitha, M. V. (2016). *Synthesis Of Mesoporous Silica Nanoparticles And Drug Loading For Gram Positive And Gram-Negative Bacteria*.
- Tania, L., Wijaya, K., & Trisunaryanti, W. (2016). Sintesis Cu(II)/Silika dengan Metode Sol-Gel sebagai Antibakteri terhadap *Escherichia Coli* dan *Staphylococcus Aureus*. *Berkala Ilmiah MIPA*, 24(2).
- Tjahjanti, P. H. (2018). *Buku Ajar Teori Dan Aplikasi Material Komposit Dan Polimer*. Umsida Press. <https://doi.org/10.21070/2019/978-602-5914-27-0>
- World Health Organization. (2023, November 21). *Antibiotics Resistance*. <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>

- Zalevskaya, O. A., & Gur'eva, Y. A. (2021). Recent Studies on the Antimicrobial Activity of Copper Complexes. *Russian Journal of Coordination Chemistry*, 47(12), 861–880. <https://doi.org/10.1134/S1070328421120046>
- Zhang, Y., Shao, D., Yan, J., Jia, X., Li, Y., Yu, P., & Zhang, T. (2016). The pore size distribution and its relationship with shale gas capacity in organic-rich mudstone of Wufeng-Longmaxi Formations, Sichuan Basin, China. *Journal of Natural Gas Geoscience*, 1(3), 213–220. <https://doi.org/10.1016/j.jnggs.2016.08.002>
- Zhong, C.-C., Zhao, T., Hogstrand, C., Chen, F., Song, C.-C., & Luo, Z. (2022). Copper (Cu) induced changes of lipid metabolism through oxidative stress-mediated autophagy and Nrf2/PPAR γ pathways. *The Journal of Nutritional Biochemistry*, 100, 108883. <https://doi.org/10.1016/j.jnutbio.2021.108883>