DAFTAR PUSTAKA

Abass, A.A., Adullridha, W.M., Alaarage, W.K., Abdulrudha, N.H. dan Haider, J., 2021. Evaluating the Antibacterial Effect of Cobalt Nanoparticles Against Multi-DrugResistant Pathogens. J Med Life 14(1), 823-833. doi: 10.25122/jml-2021-0270

Abdassah, M., 2017. Nanopartikel dengan Gelasi Ionik. Farmaka 15(1), 45-52. doi: 10.24198/jf.v15i1.12138.

Adewuyi, S., Bisiriyu, I.O., Akinremi, C.A., dan Amolegbe, S.A., 2016, Synthesis, Spectroscopic, Surface and Catalytic Reactivity of Chitosan Supported Co(II) and Its Zerovalentcobalt Nanobiocomposite. J Inorg Organomet Polym. 27, 114-121. doi: 10.1007/s10904-016-0452-1.

Ahmed, T.A. dan Aljaeid, B.M., 2016. Preparation, Characterization, and Potential Application of Chitosan, Chitosan Derivatives, and Chitosan Metal Nanoparticles in Pharmaceutical Drug Delivery. Drug Design, Devel Ther. 10(1), 483-507. doi: 10.2147/DDDT.S99651.

Amen, F., 2022. Optimization of the Synthesis of Fungus-Mediated Bi-Metallic Ag-Cu Nanoparticles. Appl. Sci. 12(3), 1-13. doi: 10.3390/app12031384.

Bhatta, H.L., Aliev, A.E. dan Drachev, V.P., 2019. New Mechanism of Plasmons Specifc for Spin-Polarized Nanoparticles. Sci. Rep. 9(1), 1-8. doi: 10.1038/S41598-019-38657.

Borisov, V.B., Siletsky, S.A., Nastasi, M.R., dan Forte, E., 2021. ROS Defense Systems and Terminal Oxidases in Bacteria. Antioxidants 10(6), 1-17. doi: 10.3390/antiox10060839.

Canton, M., Sanchez-Rodriguez, R., Spera, I., Venegas, F.C., Favia, M., Viola, A., et al., 2021. Reactive Oxygen Species in Macrophages: Sources and Targets. Macrophages 12(1), 1-13. doi:10.3389/fimmu.2021.734229.

Carapeto, A.P., Ferraria, A.M., dan do Rego, A.M.B., 2017. Unraveling The Reaction Mechanism of Silver Ions Reduction by Chitosan from So Far Neglected SpectrosCopic Features. Carbohydr. Polym. 174(1), 601-609. doi: 10.1016/j.carbpol.2017.06.100.

Chandrasekaran, M., Kim, K.D. dan Chun, S.C., 2020. Antibacterial Activity of Chitosan Nanoparticles. Processes 8(10), 1-21. doi: 10.3390/pr8091173.

Chen, X., Daliri, E.B.M., Chelliah, R. dan Oh, D.H., 2020. Isolation and Identification of Potentially Pathogenic Microorganisms Associated with Dental Caries in Human Teeth Biofilms. Microorganisms 8(1), 1-12. doi: 10.3390/microorganisms8101596.

Dara, P.K., Mahadevan, R., Digita, P.A., Visnuvinayagam, S., Kumar,L.R.G., Mathew, S., et al., 2020. Synthesis and Biochemical Characterization of Silver Nanoparticles

Grafted Chitosan (Chi-Ag-Nps): In Vitro Studies on Antioxidant and Antibacterial Applications. SN Appl. Sci. 2(665),1-12. doi: 10.1007/s42452-020-2261y.

Dayem, A.A., Hossain, M.K., Lee, S.B., Kim, K., Saha, S.K., Yang, G., et al., 2017. The Role of Reactive Oxygen Species (ROS) In the Biological Activities of Metallic Nanoparticles. Int. J. Mol. Sci. 18(120), 1-21. doi: 10.3390/ijms18010120.

Defatha, C.P. dan Thalla, A.K., 2018. Green Synthesis of Nanomaterials. Nitk Surathkal, India.

Dompeipen, E.J., 2017. Isolasi dan Identifikasi Kitin dan Kitosan dari Kulit Udang Windu (*Penaeus monodon*) dengan Spektroskopi Inframerah. Jurnal Kementerian Perindustrian 13(1), 31-41. doi: 10.29360/mb.v13i1.3120.

Esa, Y.A.M. dan Sapawe, N., 2020. A short review on biosynthesis of Cobalt metal nanoparticles Proceedings 31(1), 378-385. doi: 10.1016/j.matpr.2020.07.183.

Fatimah, S., Prasetyaningsih, Y. dan Astuti, R.W., 2022. Efektifitas Antibakteri Ekstrak Daun Pegagan (*Centella asiatica*) terhadap Pertumbuhan Bakteri *StaphyloCoccus aureus*. Jurnal Ilmu Kefarmasian 3(1). 61-68. doi: 10.31764/lf.v3i1.7233.

Fathoni, M.M., Isnaeni, Darmawati, A., 2021. Aktivitas anti bakteri Ekstrak Bunga Rosela (*Hibiscus sabdariffa L.*) terhadap Extended-Spectrum Beta-Lactamase (ESBL) *Eschericia Coli.* Berkala Ilmiah Kimia Farmasi 8(1), 7-13. doi: 10.20473/bikfar.v8i1.31204.

Fabiani, A.V., Putri, M.A., Saputra, M.E. dan Indriyani, D.P., 2019. Sintesis Nanosilver Menggunakan Bioreduktor Ekstrak Daun Pelawan (*Tristaniopsis merguensis*) dan Uji Aktivitas Antibakteri. Jurnal Kimia dan Pendidikan Kimia 4(3), 172-178. doi: 10.20961/jkpk.v4i3.34617.

Fuster, M.G., Montalban, M.G., Carissimi, G., Lima, B., Feresin, G.E., Can,M., et al., 2020. Antibacterial Effect of Chitosan–Gold Nanoparticles and Computational Modeling of the Interaction between Chitosan and a Lipid Bilayer Model. Nanomaterials 10(2340), 1-18. doi: 10.3390/nano10122340.

Gach, M.W., Lazarus, G., Simadibrata, M., Sinto, R., Saharman, Y.R., Limato, R., et al., 2024. Antimicrobial Resistance Among Common Bacterial Pathogens in Indonesia: A Systematic Review. The Lancet Regional Health 1(26), 1-14. doi: 10.1016/j.lansea.2024.100414.

Giau, V.V., An, S.S.A. dan Hulme, J., 2019. Recent Advances in the Treatment of Pathogenic Infections Using Antibiotics and Nano-Drug Delivery Vehicles, Drug Design. Devel. Ther. 18(1), 327-343. doi: 10.2147/DDDT.S190577.

Gulati, S., 2022. Chitosan-Based-NanoComposite Materials. Springer Nature Switzerland Ag. Singapore.

Gupta, A., Mumtaz, S., Li, C., Hussain, I. dan Rotello, V., 2018. Combatting Antibiotic-

Resistant Bacteria Using Nanomaterials. Chem Soc Rev. 48(2), 1-13. doi: 10.17586/2220-8054-2020-11-1-78-85.

Gupta, V., Kant, V., Sharma, A.K., dan Sharma, M., 2020. Comparative Assessment of Antibacterial Efficacy for Cobalt Nanoparticles, Bulk Cobalt and Standard Antibiotics: a Concentration Dependant Study. Nanosystems 11(1), 78-85. doi: 10.17586/2220-8054-2020-11-1-78-85.

Hasan, S., Boddu, V.M., Viswanath, D.S. dan Ghosh, T.K., 2022. Chitin and Chitosan Registered Company Springer Nature Switzerland Ag. Gewerbestrasse.

Hashem, A.H., Shehabeldine, A.M., Ali, O.M., dan Salem, S.S., 2020. Synthesis of Chitosan-Based Gold Nanoparticles: Antimicrobial and Wound-Healing Activities. Polymers 14(11), 1-17. doi: 10.3390/polym14112293.

Igwe, O.U. dan Ekebo, E.S., 2018. Biofabrication of Cobalt Nanoparticles Using Leaf Extract of *Chromolaena Odorata* and Their Potential Antibacterial Application. Research. J Chem Sci. 8(1), 11-17.

Ijaz, I., Gilani, E., Nazir, A. dan Bukhari, A., 2020. Detail Review on Chemical, Physical and Green Synthesis, Classification, Characterizations and Applications of Nanoparticles. Green Chem Lett Rev. 13(3), 223-24. doi: 10.1080/17518253.2020.1802517.

Joseph, T.M, Mahapatra, D.K., Esmaeili, A., Piszczyk, L., Hasanin, M.S., Kattali, M., et al., 2023. Nanoparticles: Taking a Unique Position in Medicine. Nanomaterials 13(574), 1-58. doi: 10.3390/Nano13030574.

Kalia, S. dan Dehradun, 2016. Chitin and Chitosan for Regenerative Medicine. Springer. India.

Khan, I., Saeed, K. dan Khan, I., 2017. Nanoparticles: Properties, Applications and Toxicities. Arab. J. Chem. 12(7), 908-931. doi: 10.1016/j.arabjc.2017.05.011.

Khan, M.A.K., 2022. Pathogenic Bacteria and Medical Treatment. Archives of Clinical Microbiology 13(8), 2-3.

Al-Khikani, F.H., 2020. Antimicrobial Resistance Profile Among Major Bacterial Pathogens in Southern Babil, Iraq. Galician medical journal 27(3), 1-8. doi: 10.21802/gmj.2020.3.6.

Kosasi, C., Lolo, W.A. dan Sudewi, S., 2019. Isolasi dan Uji Aktivitas Antibakteri dari Bakteri yang Berasosiasi dengan Alga *Turbinaria ornata* (Turner) J. Agardh serta Identifikasi Secara Biokimia. Pharma Con. 8(2), 351-359. doi: 10.35799/pha.8.2019.29301.

Koyyati, R., Kudle, K.R. dan Padigya, P.R.M., 2016. Evaluation of antibacterial and cytotoxic activity of synthesized Cobalt nanoparticlas using *raphanus sativus var*. Longipinnatus leaf extract. Int. J. Pharmtech Res. 9(3), 466-472.

Lullung, A. dan Supradi, 2012. Pengaruh Surfaktan Terhadap Diameter Partikel,

Viskositas dan Indeks Polidispertas pada Pembuatan SLN dari Lemak Kakao. Jurnal Riset dan Teknologi Industri 6(12), 1-10. doi: 10.26578/jrti.v6i12.1512.

Ma, Y., Lin, W., Ruan, Y., Lu, H., Chen, D., Huang, Y., et al., 2022. Advances of Cobalt Nanomaterials as Anti-Infection Agents, Drug Carriers, and Immunomodulators for Potential Infectious Disease Treatment. Pharmaceutics 1(14), 1-2. doi: 10.3390/pharmaceutics14112351.

Manikandan, A. dan Sathiyabama, M., 2015. Green Synthesis of Copper-Chitosan Nanoparticles and Study of its Antibacterial Activity. J Nanomed Nanotechnol 6(1), 1-5. doi: 10.4172/2157-7439.1000251

Mohammadi, S.Z., Lashkari, B. dan Khosravan, A., 2021. Green Synthesis of Co_3O_4 Nanoparticles by Using Walnut Green Skin Extract as a Reducing Agent by Using Response Surface Methodology. Surf. Interfaces 23(1), 1-9. doi: 10.1016/j.surfin.2021.100970

Moradpoor, H., Safaei, M., Rezaei, S., Golshah, A., Jamshidy, L., Hatam, R. dan Abdulla, R. S., 2019. Optimisation of Cobalt Oxide Nanoparticles Synthesis as Bactericidal Agents. Asic. Science 7(17), 2757-2762. doi: 10.3889/oamjms.2019.747.

Muhe, O.A., 2019. Antibiotic Use and Resistance Pattern in Ethiopia: Systematic Review and Meta-Analysi. Int J Microbiol. 1(1) 2-9. doi: 10.1155/2019/2489063.

Nalawati, A.N., Suyatma, N.E. dan Wardhana, D.I., 2021. Sintesis Nanopartikel Perak (NPAg) dengan Bioreduktor Ekstrak Biji Jarak Pagar dan Kajian Aktivitas Antibakterinya. Jurnal Teknologi dan Industri Pangan 32(2), 98-106. doi: 10.6066/jtip.2021.32.2.98.

Nasralla, N.HS., Mousa, S.M., El-Bassyouni, G.T., dan Komy, G.M.E., 2024. Synthesis of Cobalt Nanoparticles in Polystyrene Matrix Enhanced Optical, Dielectric, and Magnetic Properties. Surf. Interfaces 1(48), 1-14. doi: 10.1016/J.Surfin.2024.104291.

Neldawati, Ratnawulan, dan Gusnedi, 2013. Analisis Nilai Absorbansi dalam Penentuan Kadar Flavonoid untuk Berbagai Jenis Daun Tanaman Obat. Pilar of Physics 2(1), 76-83. doi: 10.24252/teknosains.v16i1.24185.

Nurbayasari, R., Saridewi, N. dan Shofwatunnisa, 2017. Biosintesis dan Karakterisasi Nanopartikel ZnO dengan Ekstrak Rumput Laut Hijau *Caulerpa sp*. Jurnal Perikanan 19(1), 17-28. doi: 10.22146/jfs.24488.

Patra, J.K., dan Baek, K.H., 2014. Green Nanobiotechnology: Factors Affecting Synthesis and Characterization Techniques. J. Nanomater 1(1), 1-12. doi: 10.1155/2014/417305.

Phan, T.T.V., Phan, D.T., Cao, X.T., Huynh, T. dan Oh, J., 2021. Roles of Chitosan in Green Synthesis of Metal Nanoparticles for Biomedical Applications. Nanomaterials 11(273), 1-15. doi: 10.3390/nano11020273.

Prasetiowati, A.L., Prasetya, A.T. dan Waerdani, S., 2018. Sintesis Nanopartikel Perak dengan Bioreduktor Ekstrak Daun Belimbing Wuluh (*Averrhoa Bilimbi L*.) Sebagai Antibakteri. Indo. J. Chem. Sci. 7(2), 160-166.

Prasetyaningtyas, T., Prasetya, A.T. dan Widiarti, N., 2020. Sintesis Nanopartikel Perak Termodifikasi Kitosan dengan Bioreduktor Ekstrak Daun Kemangi (*Ocimum Basilicum L*.) dan Uji Aktivitasnya Sebagai Antibakteri. Indo. J. Chem. Sci. 9(1), 37-43.

Pratiwi, R.H., 2017. Mekanisme Pertahanan Bakteri Patogen Terhadap Antibiotik. Jurnal Pro-Life 4(3), 418-429. doi: 10.33541/PRO-LIFE.V4I3.479.

Rizki, A.F., Nasution, H.M., Rahayu, Y.P. dan Yuniarti, R., 2023. Uji Aktivitas Antibakteri Fraksi Etil Asetat Rimpang Lempuyang Wangi (*Zingiber Zerumbet (L*.) RosCoe Terhadap Propionibacterium acnes dan *Escherichia Coli*. J. Med. Health Sci. 2(2), 5-15. doi: 10.51178/jhms.v2i2.1245.

Sadek, A.H., Asker, M.S. dan Abdelhamid, S.A., 2021. Bacteriostatic Impact of Nanoscale Zero-Valent Iron Against Pathogenic Bacteria in the Municipal Wastewater. Biologia 76(9), 2785–2809. doi: 10.1007/s11756-021-00814-w.

Satpathy, G. dan Manikandan, E., 2019. Cobalt Nanoparticle as the Antibacterial Tool: In Vitro. Int J Eng Adv Technol. 8(6), 3684-3687. doi: 10.4172/2157-7439.1000251.

Setiawati, H.C.Y., Wicaksono, D.P., Dewi, A.M. dan Sinaredi, B., 2024. Efektivitas Anti Mikrobaair Ion Perak terhadap derajat Keasaman (pH) *StreptoCoccus Mutans*. Jurnal Ilmiah Kedokteran Gigi 1(13), 151-156. doi: 10.35790/EgV13i1.55134.

Shahzadi, T., Zaib, M., Riaz, T., Shehzadi, S., Abbasi, M.A. dan Shahid, M., 2019. Synthesis of ECo-friendly Cobalt Nanoparticles Using *Celosia argentea* Plant Extract and Their Efficacy Studies as Antioxidant, Antibacterial, Hemolytic and Catalytical Agent. Arab J Sci Eng. 44(1), 1-10. doi: 10.1007/s13369019039370.

Sharma, U.R. dan Sharma, N., 2021, Green Synthesis, Anti-Cancer and Corrosion Inhibition Activity of Cr_2O_3 Nanoparticles. Res. Appl. Chem. 11(1), 8402-8412. doi: 10.33263/BRIAC111.84028412.

Singh, N., Ansari, J.R., Pal, M., Das, A., Sen, D., Chattopadhyay, D., Et Al., 2021. Enhanced Blue Photoluminescence of Cobalt-Reduced Graphene Oxide Hybrid Material and Observation of Rare Plasmonic Response by Tailoring Morphology. Appl. Phys. 127(568), 1-12. doi: 10.1007/S00339-021-04697-1.

Sorg, R.A., Lin, L., Doorn, G.S.V., Sorg, M., Olson, J., Nizet, V. dan Veening, J., 2016. Collective Resistance in Microbial Communities by Intracellular Antibiotic Deactivation. PLOS Biology 14(12),1-19. doi: 10.1371/journal.pbio.2000631.

Ssekatawa, K., Byarugaba, D.K., Wampande, E.M., Tlou, N.M., Nxumalo, E., Maaza, M., et. al., 2021. Isolation and Characterization of Chitosan from Ugandan Edible Mushrooms, Nile Perch Scales and Banana Weevils for Biomedical Applications. Sci. Rep. 11(1), 1-14. doi: 10.1038/S41598-021-81880-7.

Sun, G., Zhang, Q., Dong, Z., Dong, D., Fang, H., Wang, C., et al., 2022. Antibiotic Resistant Bacteria: A Biblometric Review of Literature. Front. Public Health (10), 1-24. doi: 10.3389/fpubh.2022.1002015.

Suvarta, K.D., Gurunath, N.H., Shubhangi, M.G.J., Sachinkumar, P.R. dan Kishor, G.V., 2020. Biogenic Synthesis of Cobalt Nanopaticles Using *Hibiscus Cannabinus* Leaf Extract and Their Antibacterial Activity. Res J Chem Environ. 24(5), 9-13.

Taba, P., Parmitha, N.Y. dan Kasim, S., 2019. Sintesis Nanopartikel Perak Menggunakan Ekstrak Daun Salam (*Syzygium polyanthum*) sebagai Bioreduktor dan Uji Aktivitasnya sebagai Antioksidan. Indonesian. J Chem Res. 7(1), 5160-5178. doi: 10.30598/ijcr.2019.7-ptb.

Tamimi, S. M. dan Othman, H., 2023. Silver Nanoparticles for Enhancing the Efficiency of Micropropagation of Banana (*Musa acuminata L.*). Trop. Life Sci. Res. 34(2), 161-175. doi: 10.21315/tlsr2023.34.2.8.

Usman, M.S., El, M.E., Zowalaty, Shamely, K., Zainuddin, N., Salama, M. et al., 2013. Synthesis, characterization, and antimicrobial properties of Copper nanoparticles. Int. J. Nanomedicine 1(8), 4467-4478. doi: 10.2147/IJN.S50837.

Varaprasad, T., Govindh, B. dan Rao, B.V., 2017. Green Synthesized Cobalt Nanoparticles using *Asparagus racemosus root* Extract & Evaluation of Antibacterial activity. is Int J Chemtech Res. 10(9), 339-345.

Vijayalakshmi, K., Devi, B.M., Sudha, P.N., Venkatesan, J. dan Anil, S., 2016. Synthesis, Characterization and Applications of Nanochitosan/Sodium Alginate/Microcrystalline Cellulose Film. J. Nanomed. Nanotechnol. 7(6), 1-11. doi: 10.4172/2157-7439.1000419.

Wahyuni, S., Prasetyo, M.A., Eris, D.D., Siswanto, dan Priyono, 2020. Sintesis dan uji in vitro penghambatan nanokitosan-Cu terhadap pertumbuhan Fusarium oxysporum dan Colletotrichum capsica. Jurnal Menara Perkebunan 88(1), 52-60. doi: 10.22302/iribb.jur.mp.v88i1.367.

Widyanti, T. dan Fatmawati, A., 2022. Deteksi Kelompok Enterobacteriaceae pada Tanah di Lingkungan Tempat Pembuangan Akhir Sampah Tamangapa Kecamatan Manggala Makassar. Jurnal Ilmu Alam dan Lingkungan 13(1), 23-31.

Wijayanti, I.L.D., dan Mahatmanti F.W., 2022, Synthesis of Chitosan/Activated Carbon Composite Beads as an Adsorbent of Pb(II) and Cu(II) ions in Aqueous Solution: A Review. Indo. J. Chem. Sci. 11(2), 1-8. doi: 10.15294/ijcs.v11i2.54943.

Wulandari, I.O., Pebriatin, B.E., Valiana, V., Hadisaputra, S., Ananto, A.D. dan Sabarudin, A., 2022. Green Synthesis of Silver Nanoparticles Coated by Water Soluble Chitosan and Its Potency as Non-AlCoholic Hand Sanitizer Formulation. Materials 15(13), 1-20. doi: 10.3390/ma15134641.