DAFTAR PUSTAKA

Ahmad, N., Sharma, S., and Ghosh, A.K. 2008. Biologically synthesised Silver nanoparticles using a Bacterial Culture Isolated from the riverine bank of Ganges in India. *NSTI-Nanotech*. 1: 994-997.

Anthony, J.J.P, Murugan, M, Gurunathan, S. 2014. Biosynthesis of silver nanoparticles from the culture supernatant of *Bacillus marisflavi* and their potential antibacterial activity. *Journal of Industrial and Engineering Chemistry*. 20: 1505–1510.

Aymonier, C., Schlotterbeck, U., Antonietti, L., Zacharias, P., Thomann, R., Tiller, J.C., and Mecking, S. 2002. Hybrids of silver nanoparticles with amphiphilic hyperbranched macromolecules exhibiting antimicrobial properties. *Chemical Communication*: 3018–3019.

Bajaj B.K, Pangotra H, Wani A.M, Sharma P, Sharma A.2009. Partial purification and characterization of a highly thermostable and pH stable endoglucanase from a newly isolated *Bacillus strain M-9*. Indian J Chem Technol 16:382–387.

Chou, K.S. and Lu, Yu C. 2008. High-Concentration Nanoscale Silver Colloidal Solution and Preparing Process Thereof. *Patent Application Publication*. US.2008/0064767 A1.

Dakal, T.C., Kumar, A., Majumdar, R.S., and Yadav, V. 2016. Mechanistic Basis of Antimicrobial Actions of Silver Nanoparticles. Frotiers in Microbiology. 1831(7): 1-17.

Deepak, V., Kalishwaralal, K., Pandian, S.R.K. and Gurunathan, S. 2011. Chapter 2: An Insight into the Bacterial Biogenesis of Silver Nanoparticles, Industrial Production and Scale-up. *Metal Nanoparticle in Microbiology*. 11: 17-35.

Desai, R., Mankand, V., Gupta, S.K., and Jha, P.K. 2012. Size Distribution of Silver Nanoparticles: UV-Visible Spectroscopic Assessment. *Nanoscience and Nanotechnology Latters*. 4(1): 30-34.

Deschatre, M., Lescop, B., Colin, C.S., Ghillebaert, F., Guezennec, J., and Rioual, S. 2015. Characterization of exopolysaccharides after sorption of silver ions in aqueous solution. *Journal of Environmental Chemical Engineering*.3(1): 210–216.

Dobais, J., and Bernier-Latmani, R. 2013. Silver Release from Silver Nanoparticles in Natural Waters. *Environ. Sci. Technol*. 47: 4140-4146.

Duran, N., Marcato, D.P., Alves, L.O., De Souza, G., Esposito, E. 2005. Mechanical aspect of biosynthesis of silver nanoparticles by several Fusarium oxysporum strains. *Nanobiotechnology*.3: 8-15.

European Commision. 2013. *Nanotechnologies: Principles, Applications, Implication, Hands on Activities*. Luxembourgh: Directorate General for Research and Innovation Industrial Technology.

Fang, J., Zhong, C., Mu, R. 2005. The Study of Deposited Silver Particulate Films by Simple Method for Efficient SERS. *Chemical Physics Letters*. 401: 271 – 275.

Franci, G., Falanga, A., Galdiero, S., Palomba, L., Rai, M., Morelli, G., and Galdiero, M. 2015. Review: Silver Nanoparticles as Potential Antibacterial Agents. *Molecules*. 20: 8856-8874.

Geddie, J.L., and Sutherland, I.W. 1993. Uptake of metals by bacterial polysaccharides, *J. Appl. Microbiol*. 74: 467-472.

Giska, J.R. 2013. The Effects of Silver Ions and Nanoparticles on Biofilms and Planktonic Cultures of *Nitrosomonas europaea*. Thesis. USA: Oregon State University.

Gogoi, K., Saikia, J.P., Konwar, B.K. 2013. Immobilizing silver nanoparticles (SNP) on *Musa balbis* 25 cellulose. *Colloids and Surfaces B: Biointerfaces*.102: 136– 138.

Gunardi, W.D. 2007. Peranan Biofilm dalam Kaitannya dengan Penyakit Infeksi. Jurnal Kedokteran Meditek. (15) 39A: 1-9.

Guzmán, M.G., and Dille,J., Godet, S. 2009. Synthesis of silver nanoparticles by chemical reduction method and their antibacterial activity. *International Journal of Chemical and Biomolecular Engineering* 2(3): 1-8.

Haroun, B.M., Menoufy, H.A.E., Amin, H.A., Waseif, A.A. 2013. Biosynthesis and Morphology of an Exopolysaccharide from a Probiotic *Lactobacillus plantarum* under different growth conditions. *Journal of Applied Sciences Research*, 9(2): 1256-1265.

Haryono,A., and Harmami, S.B. 2010. Aplikasi Nanopartikel Perak pada Serat Katun sebagai Produk Jadi Tekstil Antimikroba. *Jurnal Kimia Indonesia* 5 (1): 1-6.

Huang, J. Q., Li, D. 2007. Biosynthesis of silver and gold nanoparticles by novel sundried *Cinnamomum camphora* leaf. *Nanotechnology*. 18 (10).

Hussain, J.I., Talib, A., Kumar, S., AL-Thabaiti, S.A., Hashmia, A.A., Khana, Z. 2011. Time dependence of nucleation and growth of silver nanoparticles. *Colloids and Surfaces A: Physicochem. Eng. Aspects* 381: 23–30

Ikuma, K., Decho, A.W., and Lau, B.L.T. 2015. When nanoparticles meet biofilms interactions guiding the environmental fate and accumulation of nanoparticles. *Frontiers in Microbiology*. 6(591): 1-6.

Jorgensen, J.H and Ferraro, M.J. 2009. Antimicrobial Susceptibility Testing: A Review of General Principles and Contemporary Practices. *Medical Microbiology*. 49: 1749-1755.

Jung, W.K., Koo, H.C., Kim, K.W., Shin, S., Kim, S.H., Park, Y.H. 2008. Antibacterial activity and mechanism of action of the silver ion in *Staphylococcus aureus* and *Escherichia coli*. *Appl. Environ. Microbiol.* 74: 2171–2178.

Kalimuthu, K., Babu RS, Venkataraman, D., Mohd, B., Gurunathan, S. 2008. Biosynthesis of silver nanocrystals by *Bacillus licheniformis*. *Colloids Surf B* 65:150–153.

Kanmani, P and Lim, S.T. 2013. Synthesis and structural characterization of silver nanoparticles using bacterialexopolysaccharide and its antimicrobial activity against food and multidrugresistant pathogens. *Process Biochemistry*. 48: 1099–1106.

Keat, A.L., Aziz, A., Eid, A.M., and Elmarzugi, N.A. 2015. Biosynthesis of Nanoparticle and Silver Nanoparticles. *Bioresources and Bioprocessing*. 2 (47): 1-11.

Khan, S.S., Mukherjee, A., Chandrasekaran, N. 2011. Impact of exopolysaccharides on the stability of silver nanoparticles in water. *Water Research* 45: 5184 -5190.

Lei, G. 2007. Thesis: *Synthesis of Nano-Silver Colloids and Their Anti-Microbial Effects*. Virginia: Virginia Polytechnic Institute and State University.

Lodeiro, P., Achterberg, E.P., Pampín, J Alice Affatati, J.A., and El-Shahawi, M.S. 2016. Silver nanoparticles coated with natural polysaccharides as models to study AgNP aggregation kinetics using UV-Visible spectrophotometry upon discharge in complex environments. *Science of the Total Environment*. 539: 7–16.

Ma, Y.P., Mao, D.B., Geng, L.J., W. Y. Zhang, W.Y.,Wang, Z.,and Xu, C.P. 2013. Production Optimization, Molecular Characterization and Biological Activities of Exopolysaccharides from *Xylaria nigripes. Chem. Biochem. Eng. Q.* **27** (2): 177–184.

Madigan, M.T., Martikno, J.M., Stahl, D.A. Stahl., Clark, D.P. 2012. *Brock Biology of Micoorganisms*. San Francisco: Pearson Education, Inc.

Maneerung, T., Seiichi Tokura, S., and Rujiravanit, R. 2007. Impregnation of silver nanoparticles into bacterial cellulose for antimicrobial wound dressing. *Carbohydrate Polymers:* 1-9.

Maria, L.C.S., Santos, A.L.C., Oliveira, P.C., and Valle, A.S.S. 2010. Preparation and Antibacterial Activity of Silver nanoparticles Impregnated in Bacterial Cellulose. *Ciencia e Tecnologia* 20 (1): 72-77.

Marvasi, M., Visscher, P.T & Lilliam Casillas Martinez, L.C. 2010. Exopolymeric substances (EPS) fromBacillus subtilis:polymers and genes encoding their synthesis. FEMS Microbiol Lett: 1–9.

Mirzajani, F., Ghassempour, A., Aliahmadi, A., Esmaeili, M.A. 2011. Antibacterial effect of silver nanoparticles on *Staphylococcus aureus*. *Res. Microbiol.* 162: 542–549.

Mock, J.J., Barbic, M., Smith, D.R., Schultz, D.A., and Schultz, S. 2002. Shape effects in plasmon resonance of individual colloidal silver nanoparticles. Journal of Chemical Physics 116 (15): 6755-6759.

Morikawa, M., Kagihiro, S., Haruki, M., Takano, K., Branda, S., Kolter, R., and Kanaya, S. 2006. Biofilm formation by a Bacillus subtilis strain that produces c-polyglutamate. Microbiology. 152: 2801–2807.

Morones, J. R., Elechiguerra, J. L., Camacho, A., Holt, K., Kouri, J. B., Ram´ırez, J. T., & Yacaman, M. J. 2005. The bactericidal effect of silver nanoparticles. Nanotechnology.16: 2346-2353.

Nuryanto. 2014. Study on addition of collidal silver nanoparticles (AgNP) to the solution for Pb (II) analysis by colorimetric method. Thesis. Program Studi S2 Ilmu Kimia Jurusan Kimia FMIPA UGM: Yogyakarta.

Omoike, A and Chorover, J. 2004. Spectroscopic study of extracellular polymeric substances from Bacillus subtilis: aqueous chemistry and adsorption effects. *Biomacromolecules*. 5: 1219–1230.

Pacioni, N. L., Borsarelli, C.D., Rey, V., and Veglia, A.V. 2015. Synthetic Routes for the Preparation of Silver Nanoparticles A Mechanistic Perspective. (Alarcon, E., Griffith, M., and Edekwu, K.I. 2015. Silver Nanoparticles Applications in the Fabrication and Design of Medical and Biosensing Devices). Springer International Publishing Switzerland XIV. 13-46.

Paulkumar, K., Rajeshkumar, S., Gnanajobitha, G., Vanaja, M., Malarkodi, C., and Annadurai, G. 2013. Biosynthesis of Silver Chloride Nanoparticles Using *Bacillus subtilis* MTCC 3053 and Assessment of Its Antifungal Activity. *ISRN Nanomaterials*.2013: 1-8.

Peulen,T.O., and Wilkinson,K.J.2011.Diffusion of nanoparticles in a biofilm. *Environ.Sci.Technol*. 45: 3367–3373.

Pinto, V.V., Ferreiraa, M.J., Silva, R., Santosc, H.A., Silva, F., and Pereirab, C.M. 2010. Long time effect on the stability of silver nanoparticles in aqueous medium: Effect of the synthesis and storage conditions. *Colloids and Surfaces A: Physicochem. Eng. Aspects*. 364: 19–25.

Poinern, G.E.J. 2015. *A Laboratory Course in Nanoscience and Nanotechnology*. New York: CRC Press Taylor & Francis Group

Pugazhenthiran, N., Anandan, S., Kathiravan, G., Prakash, N.K.U., Crawford, S., Ashokkumar, M. 2009. Microbial synthesis of silver nanoparticles by Bacillus sp. *J Nanopart Res*. 11:1811–1815.

Roy, S., Mukherjee, T., Chakraborty, S., and Das, T.P. 2013. Biosynthesis, Characterization & Antifungal Activity of Silver Nanoparticles Synthesized by the Fungus *Aspergillus foetidus* MTCC8876. *Digest Journal of Nanomaterials and Biostructures*. 8 (1): 197 – 205.

Saputra, A.H., Haryono, A., Laksmono, J.A., dan Anshari, M.H. 2011. Preparasi Koloid *Nanosilver* dengan Berbagai Jenis Reduktor Sebagai Bahan Anti Bakteri. *Indonesian Journal of Materials Science*. 12(3): 202 – 208.

Sadowski, Zygmunt. 2010. Biosynthesis and Application of Silver and Gold Nanoparticles, Silver Nanoparticles, David Pozo Perez (Ed.), ISBN: 978-953-307-028-5, *InTech*, Available from: http://www.intechopen.com/books/silver-nanoparticles/biosynthesis-and-application-of-silver-and goldnanoparticles.

Šileikaitė, A., Prosyčevas, I., Puišo, J., Juraitis, A., and Guobienė, A. 2006. Analysis of Silver Nanoparticles Produced by Chemical Reduction of Silver Salt Solution. *Materials Science (Medžiagotyra).* 12 (4): 287-291.

Slonczewski, J. L., Fujisawa, M., Dopson, M., and Krulwich, T.A. 2009. Cytoplasmic pH Measurement and Homeostasis in Bacteria and Archaea. *Advances in Microbial Physyology*. 55: 1-79.

Smitha, S. L., K. M. Nissamudeen, K.M., Philip, D, and Gopchandran, K.G. 2008. Studies on surface plasmon resonance and photoluminescence of silver nanoparticles. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*. 71(1): 186-190.

Stuart, B. 2004. *Infrared Spectroscopy: Fundamentals and Applications*. New York: John Wiley & Sons, Ltd

Sutherland, I.W. 1990. *Biotechnology of Microbial Exopolysaccharides*. Cambridge: University of Cambridge Press.

Tan, Y., Wang, Z.X., Marshall and K.C. 1998. Modeling pH Effects on Microbial Growth: A Statistical Thermodynamic Approach. *BIOTECHNOLOGY AND BIOENGINEERING*. 59 (6): 724-731.

Thawadi, S.A., Mustafa, S., and Bououdina, M. 2015. Biosynthesis of Different Sizes of Silver Nanoparticles by Bacteria Screened from Cultivated Soil. *International Journal of Science and Research (IJSR)*. 4: 182-189.

Thomas, R., Janardhanan, A., Varghese, R.T., Soniya, E. V., Mathew, J., Radhakrishnan, E.K. 2014. Antibacterial properties of silver nanoparticles synthesized by marine *Ochrobactrum* sp. *Brazilian Journal of Microbiology*. 45 (4): 1221-1227.

Tolaymat, T.M., and Badawy. 2010. An evidace-based environmental perpective of manufactured silver nanopartikel in synthesis and application: asystematic Review and Critical Apprasial of Peer-Reviwed Scientific Papers". *Sci.Total. Environtment*. 408: 999-1006.

Vijayabaskar, P., Babinastarlin, S., Shankar, T., Sivakumar, T., and Anandapandian, K.T.K. 2011. Quantification and Characterization of Exopolysaccharides from *Bacillus subtilis* (MTCC 121). Advances in Biological Research 5 (2): 71-76.

Vitta, S and Thiruvengadam, V. 2012. Multifunctional bacterial cellulose and nanoparticle-embedded composites. *CURRENT SCIENCE*. 102 (10): 1398-1405.

Whitman, W. 2009. Bergey's Manual of Systematic of Bacteriology Second Edition Volume Three. USA: Springer.

Wingender, J., Neu, T.R., and Flemming, H.C. 1999. *Microbial Extracellular Polymeric Substances Characterization, Structure and Function*. Verlag Berlin Heidelberg: Springer.

Willey, J.M., Sherwood, L.M., and Woolverton, C.J. 2009. *Prescott's Principles of Microbiology*. New York: McGraw-Hill.

Wu, D., Fan, W., Kishen, A., Gutmann, J.L., Fan, B. 2014. Evaluation of the antibacterial efficacy of silver nanoparticles against *Enterococcus faecalis* biofilm. *J. Endod.* 40: 285–290.

Xu Z P, Z.Q.P., Lu G Q and Yu A B. 2006. Inorganic Nanoparticles as Carriers for Efficient Cellular Delivery. *Chemical Engineering Science*. 61: p. 1027-1040.