

## DAFTAR PUSTAKA

- Afshar, S., Jahromi, H. S., Jafari, N., Ahmadi, Z. & Hakamizadeh, M. 2011. Degradation of malachite green oxalate by UV and visible lights irradiation using Pt/TiO<sub>2</sub>/SiO<sub>2</sub> nanophotocatalyst. *Scientia Iranica*, 18: 772-779.
- Alderman, D. J. 1985. Malachite green: a review. *Journal of Fish Diseases* 8: 289-298.
- Alzahrani, Z. 2010. *Biuret Assay*. Retrieved from Kansas State University: [http://faculty.ksu.edu.sa/Zaenab\\_Alzahrani/Documents/Experiment\\_no.\\_6\\_handout\\_Final\\_copy.pdf](http://faculty.ksu.edu.sa/Zaenab_Alzahrani/Documents/Experiment_no._6_handout_Final_copy.pdf) (23 Mei 2018).
- Amersham Bioscience. 1999. *Protein Electrophoresis: Technical Manual*. Buckinghamshire: Amersham Bioscience Inc. pp. 36-39.
- Annamalai, N., Thavasi, R., Vijayalakshmi, S. & Balasubramanian, T. 2011. Extraction, purification, and characterization of thermostable, alkaline tolerant alpha-amylase from *Bacillus cereus*. *Indian Journal of Microbiology*, 51: 424-429.
- Augusta University. 2010. *Biuret Protein Assay*. Retrieved from Augusta University: [http://www.augusta.edu/scimath/biology/courses/BIOL\\_1107/biuretproteinassay.pdf](http://www.augusta.edu/scimath/biology/courses/BIOL_1107/biuretproteinassay.pdf) (23 Mei 2018).
- Barapatre, A., Aadil, K. R. & Jha, H. 2017. Biodegradation of malachite green by the ligninolytic fungus *Aspergillus flavus*. *CLEAN–Soil, Air, Water*, 45: 1-22.
- Behera, S., Ghanty, S., Ahmad, F., Santra, S. & Banerjee, S. 2012. UV-Visible spectrophotometric method development and validation of assay of paracetamol tablet formulation. *Journal Analytical and Bioanalytical Techniques*, 3: 2-6.
- Bojinova, A. S., Papazova, C. I., Karadjova, I. B. & Poulios, I. 2008. Photocatalytic degradation of malachite green dyes with TiO<sub>2</sub>/WO<sub>3</sub> composite. *Eurasian Journal of Analytical Chemistry*, 3: 34-43.
- Brovko, L. Y., Meyer, A., Tiwana, A. S., Chen, W., Liu, H., Filipe, C. D. & Griffiths, M. W. 2009. Photodynamic treatment: a novel method for sanitation of food handling and food processing surfaces. *Journal of Food Protection*, 72: 1020-1024.
- Cha, C. J., Doerge, D. R. & Cerniglia, C. E. 2001. Biotransformation of malachite green by the fungus *Cunninghamella elegans*. *Applied and Environmental Microbiology*, 67: 4358-4360.
- Chen, S. H., & Ting, A. S. Y. 2015. Biosorption and biodegradation potential of triphenylmethane dyes by newly discovered *Penicillium simplicissimum*

- isolated from indoor wastewater sample. *International Biodegradation & Biodegradation*, 103: 1-7.
- Cleinmensen, S., Jensen, J. C., Jensen, N. J., Meyer, O., Olsen, P. & Würtzen, G. 1984. Toxicological studies on malachite green: a triphenylmethane dye. *Archives of toxicology*, 56: 43-45.
- Culp, S. J., Mellick, P. W., Trotter, R. W., Greenlees, K. J., Kodell, R. L. & Beland, F. A. 2006. Carcinogenicity of malachite green chloride and leucomalachite green in B6C3F1 mice and F344 rats. *Food and Chemical Toxicology*, 44: 1204-1212.
- Culp, S.J. & Beland, F.A., 1996. Malachite green: a toxicological review. *Journal of the American College of Toxicology*, 15: 219–238.
- de Carvalho, M. E. A., Monteiro, M. & Sant'anna, G. L. 1999. Laccase from *Trametes versicolor*: Stability at temperature and alkaline conditions and its effect on biobleaching of hardwood Kraft pulp. *Applied biochemistry and biotechnology*, 77: 723-733.
- Doerge, D. R., Chang, H. C., Divi, R. L. & Churchwell, M. I. 1998. Mechanism for inhibition of thyroid peroxidase by leucomalachite green. *Chemical research in toxicology*, 11: 1098-1104.
- Du, L. N., Wang, S., Li, G., Wang, B., Jia, X. M., Zhao, Y. H. & Chen, Y. L. 2011. Biodegradation of malachite green by *Pseudomonas* sp. strain DY1 under aerobic condition: characteristics, degradation products, enzyme analysis and phytotoxicity. *Ecotoxicology*, 20: 438-446.
- Du, L. N., Zhao, M., Li, G., Xu, F. C., Chen, W. H. & Zhao, Y. H. 2013. Biodegradation of malachite green by *Micrococcus* sp. strain BD15: biodegradation pathway and enzyme analysis. *International Biodegradation & Biodegradation*, 78: 108-116.
- Falade, A. O., Nwodo, U. U., Iweriebor, B. C., Green, E., Mabinya, L. V. & Okoh, A. I. 2017. Lignin peroxidase functionalities and prospective applications. *Microbiology Open*, 6: e00394.
- Fessard, V., Godard, T., Huet, S., Mourot, A. U. & Poul, J. M. 1999. Mutagenicity of malachite green and leucomalachite green in *in vitro* tests. *Journal of Applied Toxicology: An International Forum Devoted to Research and Methods Emphasizing Direct Clinical, Industrial and Environmental Applications*, 19: 421-430.
- Fetzner, S. 2012. Ring-Cleaving Dioxygenases with a Cupin Fold. *Applied and Environmental Microbiology*, 78: 2505–2514.
- Gomare, S. S., Pashetti, G. K. & Govindwar, S. P. 2009. Biodegradation of malachite green by *Brevibacillus laterosporus* MTCC 2298. *Water Environment Research*, 81: 2329-2336.
- Grabski, A. C. & Burgess, R. R. 2013. *Preparation of Protein Samples for SDS Polyacrylamide Gel Electrophoresis: Procedures and Tips*. Retrieved from

The Hebrew University of Jerusalem: [http://wolfson.huji.ac.il/purification/PDF/PAGE\\_SDS/NOVAGEN\\_Prep\\_Sample\\_PAGE\\_SDS.pdf](http://wolfson.huji.ac.il/purification/PDF/PAGE_SDS/NOVAGEN_Prep_Sample_PAGE_SDS.pdf) (23 Mei 2018).

- Henderson, A. L., Schmitt, T. C., Heinze, T. M. & Cerniglia, C. E. 1997. Reduction of malachite green to leucomalachite green by intestinal bacteria. *Applied and Environmental Microbiology*, 63: 4099-4101.
- Ihsen, J., Schubert, M., Thöny-Meyer, L. & Richter, M. 2014. Laccase catalyzed synthesis of iodinated phenolic compounds with antifungal activity. *PloS one*, 9: e89924.
- Jang, M. S., Lee, Y. M., Kim, C. H., Lee, J. H., Kang, D. W., Kim, S. J. & Lee, Y. C. 2005. Triphenylmethane reductase from *Citrobacter* sp. strain KCTC 18061P: purification, characterization, gene cloning, and overexpression of a functional protein in *Escherichia coli*. *Applied and Environmental Microbiology*, 71: 7955-7960.
- Joshi, P. A. & Mhatre, K. J. 2015. Microbial efficiency to degrade Carbol fuchsin and Malachite green dyes. *Advances in Applied Science Research*, 6: 86-88.
- Khalid, A., Arshad, M. & Crowley, D. E. 2008. Accelerated decolorization of structurally different azo dyes by newly isolated bacterial strains. *Applied Microbiology and Biotechnology*, 78: 361-369.
- Kim, M. H., Kim, Y., Park, H. J., Lee, J. S., Kwak, S. N., Jung, W. H., Lee, S. G., Kim, D., Lee, Y. C. & Oh, T. K. (2008). Structural insight into bioremediation of triphenylmethane dyes by *Citrobacter* sp. triphenylmethane reductase. *Journal of biological chemistry*, 283: 31981-31990.
- Lv, G. Y., Cheng, J. H., Chen, X. Y., Zhang, Z. F. & Fan, L. F. 2013. Biological decolorization of malachite green by *Deinococcus radiodurans* R1. *Bioresource technology*, 144: 275-280.
- Madhavi, V. & Lele, S. S. 2009. Laccase properties and application. *BioResources*, 4: 1694-1717.
- Miyazaki, K., Arai, S., Iwamoto, T., Takasaki, M. & Tomoda, A. 2004. Metabolism of pyrogallol to purpurogallin by human erythrocytic hemoglobin. *The Tohoku Journal of Experimental Medicine*, 203: 319-330.
- Mukherjee, T. & Das, M. 2014. Degradation of malachite green by *Enterobacter asburiae* strain XJUHX-4TM. *CLEAN–Soil, Air, Water*, 42: 849-856.
- National Center for Biotechnology Information. 2017. *Malachite Green*. Retrieved from PubChem Compound Database: <https://pubchem.ncbi.nlm.nih.gov/compound/11294> (2 November 2017).
- National Forensic Science Technology Center. 2018. *DNA Analyst Training Laboratory Training Manual Protocol 2.18 Leucomalachite Green Presumptive Test for Blood*. Retrieved from National Institute of Justice:

- [https://static.training.nih.gov/lab-manual/Linked%20Documents/Protocols/pdi\\_lab\\_pro\\_2.18.pdf](https://static.training.nih.gov/lab-manual/Linked%20Documents/Protocols/pdi_lab_pro_2.18.pdf) (29 April 2018).
- Olukanni, O. D., Adenopo, A., Awotula, A. O. & Osuntoki, A. A. 2013. Biodegradation of malachite green by extracellular laccase producing *Bacillus thuringiensis* RUN1. *Journal of Basic & Applied Sciences*, 9: 543-550.
- Papinutti, V. L. & Forchiassin, F. 2004. Modification of malachite green by *Fomes sclerodermeus* and reduction of toxicity to *Phanerochaete chrysosporium*. *FEMS microbiology letters*, 231: 205-209.
- Park, C., Lee, M., Lee, B., Kim, S. W., Chase, H. A., Lee, J. & Kim, S. 2007. Biodegradation and biosorption for decolorization of synthetic dyes by *Funalia trogii*. *Biochemical Engineering Journal*, 36: 59-65.
- Parshetti, G., Kalme, S., Saratale, G. & Govindwar, S. 2006. Biodegradation of malachite green by *Kocuria rosea* MTCC 1532. *Acta Chimica Slovenica*, 53: 492-498.
- Patel, H., Gupte, S., Gahlaut, M. & Gupte, A. 2014. Purification and characterization of an extracellular laccase from solid-state culture of *Pleurotus ostreatus* HP-1. *3 Biotech*, 4: 77–84.
- Pourbabaei, A. A., Ramezani, S. & Javaheri Daneshmand, H. 2013. Biodegradation of malachite green by *Klebsiella Terrigenaptcc* 1650: The critical parameters were optimized using Taguchi optimization method. *Journal of Bioremediation and Biodegradation*, 4: 175.
- Puvaneswari, N., Muthukrishnan, J. & Gunasekaran, P. 2006. Toxicity assessment and microbial degradation of azo dyes. *Indian Journal of Experimental Biology*, 44: 618-626.
- Rao, K. V. K. 1995. Inhibition of DNA synthesis in primary rat hepatocyte cultures by malachite green: a new liver tumor promoter. *Toxicology letters*, 81: 107-113.
- Rice University. 2015. *Biuret Protein Assay*. Retrieved from Rice University: <http://www.ruf.rice.edu/~bioslabs/methods/protein/biuret.html> (22 Januari 2018).
- Rossoff, I. S. 1974. *Handbook of Veterinary Drugs*. New York: Springer Publishing Company. p. 51.
- Salutric, E., Djordjevich, S. & Cannon, A. 2013. *Enterobacter cloacae*. Retrieved from Microbe Wiki: [https://microbewiki.kenyon.edu/index.php/Enterobacter\\_cloacae](https://microbewiki.kenyon.edu/index.php/Enterobacter_cloacae) (19 Mei 2018).
- Shedbalkar, U. & Jadhav, J. P. 2011. Detoxification of malachite green and textile industrial effluent by *Penicillium ochrochloron*. *Biotechnology and Bioprocess Engineering* 16: 196-204.

- Shin, K. S., Kim, Y. H. & Lim, J. S. 2005. Purification and characterization of manganese peroxidase of the white-rot fungus *Irpea lacteus*. *Journal of Microbiology*, 43: 503-509.
- Singh, S. N. 2015. *Microbial Degradation of Synthetic Dyes in Wastewaters*. Switzerland: Springer. pp. 153-155.
- Skoog, D. A., Holler, F. J. & Crouch, S. R. 2007. *Principles of Instrumental Analysis* (6<sup>th</sup> ed.). Belmont, CA: Thomson Brooks/Cole. pp. 169–173.
- Sneha, U., Poornima, R. & Sridhar, S. 2014. Optimization and decolorization of malachite green using *Pseudomonas putida*. *Journal of Chemical and Pharmaceutical Research*, 6: 50-57.
- Soares, G. M., Costa-Ferreira, M. & de Amorim, M. P. 2001. Decolorization of an anthraquinone-type dye using a laccase formulation. *Bioresource Technology*, 79: 171-177.
- Srivastava, S., Sinha, R. & Roy, D. 2004. Toxicological effects of malachite green. *Aquatic Toxicology*, 66: 319-329.
- Thermo Nicolet Corporation. 2001. *Introduction to Fourier Transform Infrared Spectrometry*. Retrieved from Northern Illinois University: [https://www.niu.edu/analyticalab/\\_pdf/ftir/FTIRintro.pdf](https://www.niu.edu/analyticalab/_pdf/ftir/FTIRintro.pdf) (24 Januari 2018).
- University of California, Los Angeles. 2015. *Thin Layer Chromatography*. Retrieved from University of California, Los Angeles: <http://www.chem.ucla.edu/~bacher/General/30BL/tips/TLC1.html> (24 Januari 2018).
- Valerie. 2016. Isolasi dan Screening Bakteri Pendekolorisasi Pewarna Tekstil Malachite Green dari Lumpur Aktif [skripsi]. Tangerang (ID): Universitas Pelita Harapan.
- Wang, J., Gao, F., Liu, Z., Qiao, M., Niu, X., Zhang, K. Q. & Huang, X. 2012. Pathway and molecular mechanisms for malachite green biodegradation in *Exiguobacterium* sp. MG2. *PloS one*, 7: e51808.
- Wang, N. S. 2018. *Enzyme Purification by Acetone Precipitation*. Retrieved from University of Maryland: <https://eng.umd.edu/~nsw/ench485/lab6b.htm> (21 Mei 2018).
- Wanyonyi, W. C., Onyari, J. M., Shiundu, P. M. & Mulaa, F. J. 2014. Enzymatic Decolorization of malachite green dye by a newly isolated *Bacillus cereus* strain wcp1. *Journal of Environmental Science, Toxicology and Food Technology*, 8: 58-64.
- Wanyonyi, W. C., Onyari, J. M., Shiundu, P. M. & Mulaa, F. J. 2017. Biodegradation and detoxification of malachite green dye using novel enzymes from *Bacillus cereus* strain KM201428: kinetic and metabolite analysis. *Energy Procedia*, 119: 38-51.

- Xu, J. Z., Zhang, J. L., Hu, K. H. & Zhang, W. G. 2013. The relationship between lignin peroxidase and manganese peroxidase production capacities and cultivation periods of mushrooms. *Microbiology Biotechnology*, 6: 241–247.
- Yang, J., Yang, X., Lin, Y., Ng, T. B., Lin, J. & Ye, X. 2015. Laccase-catalyzed decolorization of malachite green: performance optimization and degradation mechanism. *PLoS ONE*, 10: e0127714.
- Zhang, C., Zhang, S., Diao, H., Zhao, H., Zhu, X., Lu, F. & Lu, Z. 2013. Purification and characterization of a temperature-and pH-stable laccase from the spores of *Bacillus vallismortis* fmb-103 and its application in the degradation of malachite green. *Journal of agricultural and food chemistry*, 61: 5468-5473.
- Zhang, M., Wu, F., Wei, Z., Xiao, Y. & Gong, W. 2006. Characterization and decolorization ability of a laccase from *Panus rufus*. *Enzyme and Microbial Technology*, 39: 92-97.

