

- Andreazza, R., Okeke, B.C., Pieniz, S., Brandelli, A., Lambais, M.R., and Camargo, F.A.O. 2011. Bioreduction of Cu(II) by Cell Free Copper Reductase from a Copper Resistant *Pseudomonas* sp. NA. *Biology Trace Elements Resistance*. **143** 1182-1192.
- Altimirra, F., C, Yanez., G, Bravo., M, Gonzalez., L.A. Rojas., and M. Seeger. 2012. Charaterization of copper-resistant bacteria and bacerial communities from copper-polluted agricultural soils of central Chile. *BMC Microbiology*. **12** 193.
- Atlas, R.M. and Bartha, R. 1997. *Microbial Ecology: Fundamentals and Applications*, 4th ed. Benjamin/Cummings.
- Artiola,J.F. 2005. *Handbook of Elemental Speciation II : Species in the Environment, Food, Medicine & Occupational Health*. John Wiley & Sons, Ltd. page : 174-178
- Ashish, B., K. Neeti., K. Himanshu. 2013. Review : Copper Toxicity : A Comprehensive Study. *Research Journal of Recent Sciences*. **2** 58-67.
- Cao, J., Zhang, G., Mao, Z., Li, Y., Fang, Z., ad Yang, C. 2012. Influence of electron donors on the growth and activity of sulfate-reducing bacteria. *International Journal Miner Process*. **106** 58-64.
- Chen, Z.F., Zhao, Y.S., and Li, Q. 2016. Influence of Fe(III) on Cr(IV) Reduction by Organic Reducing Substances from Sugarcane Molasses. *Water Air Soil Pollution*. **227** doi 10.1007/s11270-015-2678-x.
- Chillappagari, S., Miethke, M., Trip, H., Kuipers, O.P., and Marahiel, M.A. 2009. Copper Acquisition Is Mediated by YcnJ and Regulated by YcnK and CsoR in *Bacillus subtilis*. *Journal of Bacteriology*. **191** 2362-2370.
- Constantin, M., C.D. Negut., C. Barna., C. Cimpeanu., and I.I. Ardelean. 2015. Isolation and Identification of Soil Bacteria Able to Efficiently Remove Copper From Culture Mediums. *Rom. Journ. Phys*. **61** 707-717.
- Cornu, J.Y., Huguenot, D., Jezequel, K., Lollier, M., and Lebeau, T. 2017. Review: Bioremediation of Copper Contaminated Soils by Bacteria. *World Journal of Biotechnology*. **33:26** 1-9.
- Costa, A.C.A and F.P. Duta. Bioaccumulation of Copper, Zinc, Cadmium and Lead by *Bacillus* sp., *Bacillus cereus*, *Bacillus sphaericus*, and *Bacillus subtilis*. *Brazillian Journal of Microbiology*. **32** 1-5
- Festa, R. A., and D.J. Thiele. 2011. Copper: an Essential Metal in Biology. *Current Biology*. **21** 877-883.
- Franchitto. N., Gandia-Mailly, P., Georges, B., Galinier, A., Telmon, N., Ducassé, J.L. and Rougé, D. 2008. Acute copper sulphate poisoning: a case report and literature review. *Resuscitation*. **78(1)** 92-6.
- Guo, H., Luo, S., Chen, L., Xiao, X., Xi, Q., Wei, W., Zeng, G., Liu, C., Wan, Y., Chen, J., and He, Y. 2010. Bioremediation of heavy metals by growing hyperaccumulator endophytic bacterium *Bacillus* sp. L14. *Bioresource Technology*. **101** 8599-8605.
- Guo, Z., J. Han., X-Y. Yang., K. Cao., K. He., G. Du., G. Zeng., L. Zhang., G. Yu., Z. Sun., Q-Y. He., and X. Sun. 2015. Proteomic analysis of the copper resistance of *Streptococcus pneumoniae*. *Metallomics*. **7** 448.
- Grass, G., Rensing, C., and Solioz, M. 2011. Minireviews: Metallic Copper as an Antimicrobial Surface. *Applied and Environmental Microbiology*. **77** 1541-1547.
- Hasset, R., and Kosman, D.J. 1995. Evidence for Cu Reduction as a Component of Copper Uptake by *Saccharomyces cerevisiae*. *The Journal of Biology Chemistry*. **270** 128-134.
- Hesketh, A., Broadhurst, J., & Harrison, S. 2010. Mitigating the generation acid mine drainage from copper sulphide tailings impoundments in perpetuity: a case study for an integrated management strategy. *Miner. Eng.* **23 (3)**, 225-229.



- Hidayati, N., T. Surtiningsih., and Ni'matuzahroh. 2014. Removal of Heavy Metals Pb, Zn and Cu from Sludge Waste of Paper Industries Using Biosurfactant. *Journal Bioremediation & Biodegradation*. **5** 1-3.
- Jiwan, S., and Ajay, K.S. 2011. Effects of Heavy Metals on Soil, Plants, Human Health and Aquatic Life. *International Journal of Research in Chemistry and Environment*. **2** 15-21.
- Kim, S.W., Kim, J.A., Kim, E., Ro, Y.T., Song, T., and Kim, Y.M. 2009. Purification and Some Properties of a Blue Copper Protein from *Methylobacillus* sp. Strain SK1 DSM 8269. *Molecular Cells*. **14** 214-223.
- Krishna, K.M., and L. Philip. 2005. Bioremediation of Cr (VI) in Contaminated Soils. *Journal of Hazardous Materials*. **B121** 109-117.
- Letnik, I., Avrahami, R., Port, R., Greiner, A., Zussman, E., Rokem, J.S., and Greenblatt, C. 2017. Biosorption of copper from aqueous environments by *Micrococcus luteus* in cell suspension and when encapsulated. *International Biodeterioration & Biodegradation*. **116** 64-72.
- Montelongo, R.L., Volentini, S.I. Farias, R.N. Massa, E.M., and Rapisarda, V.A. 2006. The Cu(II)-reductase NADH dehydrogenase-2 of *Escherichia coli* improves the bacterial growth in extreme copper concentrations and increases the resistance to the damage caused by copper and hyperoxide. *Archives of Biochemistry and Biophysics*. **451** 1-7.
- Muter, O., K. Potapova., B. Limane., K. Sproge., I. Jakobson., G. Cepurnieks., and V. Bartkevics. The role of nutrients in the biodegradation of 2,4,6-trinitrotoluene in liquid and soil. *Journal of Environmental Management*. **98** 51-55.
- Ojuderie, O.B., O.O. Babalola. 2017. Microbial and Plant-Assisted Bioremediation of Heavy Metal Polluted Environments : A Review. *International Journal of Environmental Research and Public Health*. **14** 1-26.
- Olmezoglu, E., Herand, B.K., Oncel, M.S., Tunc, K., and Ozkan, M. 2012. Copper bioremoval by novel bacterial isolates and their identification by 16S rRNA gene sequence analysis. *Turkiye Journal of Biology*. **36** 469-476.
- Outten, F.W., D.L. Huffman., J.A. Hale., and T.V. O'Halloran. 2001. The Independent *cue* and *cus* Systems Confer Copper Tolerance during Aerobic and Anaerobic Growth in *Escherichia coli*. *The Journal of Biological Chemistry*. **276** 30670-30677
- Oves, M., Khan, M.S., and Zaidi, A. 2012. Biosorption of heavy metals by *Bacillus thuringiensis* strain OSM29 originating from industrial effluent contaminated north Indian Soil. *Saudi Journal of Biological Sciences*. **20** 121-129.
- Palar, H. 1994. *Pencemaran dan Toksikologi Logam Berat*. Penerbit Rineka Cipta. Hal : 23-56.
- Paturau, J.M. 1989. *By-Products of the Cane Sugar Industry – an Introduction to their Industrial Utilisation* 3rd edition. Elsevier. Amsterdam. 213-217.
- Peraturan Menteri Lingkungan Hidup. 2004. *Nomor 202 tentang Baku Mutu Air Limbah Bagi Usaha dan atau Kegiatan Pertambangan Bijih Emas dan atau Tembaga*. Pemerintah Republik Indonesia.
- Punjungsari, T.N. 2017. *Pengaruh Molase dan Zeolit Terhadap Aktivitas Konsorsium Bakteri Pereduksi Sulfat Pada Pengendapan Logam Cu*. Tesis. Universitas Gadjah Mada.
- Rapisarda, V.A., Montelongo, L.R., Farias, R.N., and Massa, E.M. 1999. Characterization of an NADH-Linked Cupric Reductase Activity from the *Escherichia coli* Respiratory Chain. *Archives of Biochemistry and Biophysics*. **370** 143-150.
- Rensing, C., and Grass, G. 2003. *Escherichia coli* mechanisms of copper homeostasis in a changing environment. *FEMS Microbiology Reviews*. **27** 197-213.
- Retnaningrum, E. and W. Wilopo. 2017. Removal of Sulphate and Manganese on Synthetic Wastewater in Sulphate Reducing Bioreactor Using Indonesian Natural Zeolite. *Indones. J. Chem*. **17** 203-210



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- Sabae, S.Z., Hazaa, M., Hallim, S.A., Awny, N.M., and Daboor, S.M. 2006. Bioremediation of Zn^{2+} , Cu, and Fe^{2+} using *Bacillus subtilis* D215 and *Pseudomonas putida* biovar A D225. *Bioscience Research*. **3** 189-204.
- Solomon, F. 2009. *Impacts of Copper On Aquatic Ecosystems and Human Health*. www.mining.com akses 2 September 2018.
- Somasundaram, V., and Philip, L. 2011. Laboratory scale column studies on transport and biotransformation of Cr(IV) through porous media in presence of CRB, SRB, and IRB. *Chemical Engineering Journal*. **171** 572-581.
- Stern B.R., Solioz M., Krewski D., Aggett P., Aw T. C., Baker S., Crump K., Dourson M., Haber L., Hertzberg R., Keen C., Meek B., Rudenko L., Schoeny R., Slob, W. and Starr T. 2007. Copper and human health: biochemistry, genetics, and strategies for modeling dose response relationships. *Journal of Toxicology And Environmental Health Part B*, **10** 157–222.
- Suhendrayana. 2001. Heavy Metal Bioremoval by Microorganism : A Literature Study. Department of Applied Chemistry and Chemical Engineering, Faculty Of Engineering Kagoshima University. Japan.
- Tarigan, Z., Edward., dan Rozak, A. 2003. Kandungan Logam Berat Pb, Cd, Cu, Zn, dan Ni dalam Air Laut dan Sedimen di Muara Sungai Membramo, Papua dalam Kaitannya Dengan Kepentingan Budidaya Perikanan. *Makara Sains*. **7** 119-127.
- Teclu, D.G. 2008. *Bioremediation of Arsenic Contaminated Groundwater*. Dissertation. School of Biochemistry, Genetics, Microbiology and Plant Pathology University of KwaZulu. Natal.
- The Agency for Toxic Substances and Disease. 2004. *Toxicological Profile for Copper*. www.atsdr.cdc.gov akses 2 September 2018.
- Tirado, V.R., Ruiz, C.G., and Gil, B.G. 2012. Cu and Pb biosorption on *Bacillus thioeparans* strain U3 in aqueous solution: Kinetic and equilibrium studies. *Chemical Engineering Journal*. **181-182** 352-359.
- Tiwari, M., and Dubey, A.K. 2016. Cypermethrin bioremediation in presence of heavy metals by a novel heavy metal tolerant strain, *Bacillus* sp. AKD1. *International Biodeterioration & Biodegradation*. **108** 42-47.
- Trihadiningrum, Y., Arinda, T., Sholikah, U., Shovitri, M., Wilujeng, S.A., and Pandebesie, E.S. 2014. Bioremoval of Chromium, Copper and Cadmium by *Bacillus cereus* in Simulated Electroplating Wastewater. *IPTEK, Journal of Proceeding Series*. **1** 31-36.
- Wasi, S., Tabrez, S., Ahmad, M. 2013. Use of *Pseudomonas* spp. for the bioremediation of environmental pollutants : a review. *Environmental Monitoring Assesment*. **185** 1-8.