

## DAFTAR PUSTAKA

- Abdelmohsen, U. R., Bayera, K., Hentschela, U. 2014. Diversity, abundance and natural products of marine sponge-associated Actinobacteria. *Nat. Prod. Rep.* 31: 381-399.
- Abubakar, H., Wahyudi, A.T, Yuhana, M. 2011. Skrining bakteri yang berasosiasi dengan spons *Jaspis sp.* sebagai penghasil senyawa antimikroba. *J. Ilmu Kel.* 16: 35–40.
- Andreote, F.D., Jiménez, D.J., Chaves, D., Dias, A.C., Luvizotto, D.M., Fasanella, C.C., Lopez, M.V., Baena, S., Taketani, R.G., de Melo, I.S., 2011. The microbiome of Brazilian mangrove sediments as revealed by metagenomics. *PLoS One* 7.
- Arumugam T, P. Senthil Kumar, R. Kameswhar, K. Prapanchana. 2017. Screening of Novel Actinobacteria and characterization of the potential isolates from mangrove sediment of south coastal India. *J. Mic. Path.* 107: 225-233.
- Auffinger, P., F.A. Hays, E. Westhof, and P.S. Ho. 2004. Halogen bonds in biological molecules. *PNAS.* 48: 16789 –16794.
- Augustine, D., Jacob, J. C., and Philip, R. 2015. Exclusion of *Vibrio* spp. by an antagonistic marine actinomycete *Streptomyces rubrolavendulae* M56. *Aquac. Res.* 1–10.
- Austin, B., and D.A. Austin. 2007. Bacterial fish pathogens: disease of farmed and wild fish, 4th Ed. *Springer Praxis Publishing*, Chichester, United Kingdom, pp 552.
- Ayudo-Sacido, and Genilloud. 2005. New PCR primers for the screening of NRPS and PKS-I systems in Actinobacteria: detection and distribution of these biosynthetic gene sequences in major taxonomic groups. *Microb. Ecol.* 49: 10-24.
- Berdy, J. 2005. Bioactive microbial metabolites. *J. Antibiotics* 58: 1 – 26.
- Blunt, J.W., Copp, B.R., Keyzers, R.A., Munro, M. and Prinsep, M.R. 2017. Marine natural products. *Nat. Prod. Rep.* 34: 235–294.
- Cai, Li. 2014. Current protocols essential laboratory techniques : Thin layer chromatography. *John Wiley & Sons, Inc.* 8: 6.3.1- 6.3.18. New York.
- Chen, J. L., Steele, T. W. And Stucky, D. C. 2015. Modelling and application of a rapid fluorescence-based assay for biotoxicity in aerobic digestion. *Environ. Sci. Technol.* 49: 13463 – 13471.
- Dashti, Y., Tanja, G., Usama, .RA., Hentschel and Ronald J. Q. 2014. Production of induced secondary metabolites by a co-culture of sponge-associated Actinomycetes, *Actinokineospora* sp. EG49 and *Nocardiosis* sp. RV163. *Mar. Drugs* 12: 3046-3059.
- Desjardine, A. Pereira, H. Wright, T. Matainaho, M. Kelly, R.J. Andersen. 2007. Tauramamide, a lipopeptide antibiotic produced in culture by *Brevibacillus laterosporus* isolated from a marine habitat: Structure elucidation and synthesis, *J. Nat. Prod.* 70: 1850 - 1853.

- Dey, M. C., Basu, S. and Sinhababu, A. 2016. Analytical chemistry letters : Detection of amino acids on TLC plates by novel spray reagent. *Taylor and Francis Group* 6: 886 – 893.
- Desriac, F., Defer, D., Bourgougnon, N., Brillet, B., Le Chevalier, P., and Fleury, Y. 2010. Bacteriocin as weapons in the marine animal-associated bacteria warfare : inventory and potential applications as an aquaculture probiotic. *Mar. Drugs* 8: 1153–1177.
- Eleonor A.T. & Leobert, D. de la Pena. 2001. Antibiotic resistance of bacteria from shrimp ponds. *Aquaculture* 195: 193–204.
- Elmahdi, S., Da Silva, L., and Parveen, S. 2016. Antibiotic resistance of *Vibrio parahaemolyticus* and *Vibrio vulnificus* in various countris : A review. *Food Microbiol.* 57: 128-134.
- El-Gendy, M.M., Shaaban, M., Shaaban, K.A., El-Bondkly, A.M., Laatsch, H., 2008. Essramycin: a first triazolopyrimidineantibiotic isolated from nature. *J. Antibiot.* 61: 149–157.
- Fan, Bicheng., Parrot, D., Blumell, M., Labes, A. and Tasdemir, D. 2019. Influence of OSMAC-based cultivation in metabolome and anticancer activity of fungi associated with the brown alga *Fucus vesiculosus*. *Mar. Drugs.* 17: 67 – 93.
- Fattorusso, E., Tagliatela-Scafati, O. 2008. Modern Alkaloids: Structure, Isolation, Synthesis and Biology, 1st ed. ; *John Wiley & Sons*: Chichester, UK ; pp. 271.
- Felix, F., Nugroho, T.T, Silalahi, S., Octavia, Y. 2011. Skrining bakteri *Vibrio* sp. asli Indonesia sebagai penyebab penyakit udang berbasis tehnik 16S ribosomal DNA. *J. Ilmu Teknol. Kelaut. Trop.* 3: 85–99.
- Friedman, Mendel. 2004. Aplication of the ninhydrin reaction for analysis of amino acids, peptides, and proteins to agricultural and biomedical science. *J. Agric. Food.* 52: 385 – 406.
- Fuentes. M.S., A. Alvarez, J. M. Saez., C. S. Benimeli., M. J. Amoroso. 2014. Methoxychlor bioremediation by defined consortium of environmental *Streptomyces* strains. *Int. J. Environ. Sci. Technol.* 11:1147–1156.
- Gibbons, Simon. 2006. Natural Products Isolation 2nd ed: An Intoduction of Planar Chromatography. *Humana Press Inc.* Totowa, New Jersey.
- Gupta, S.K., Padmanabhan, B.R., Diene, S.M., Lopez-Rojas, R., Kempf, M., Landraud, L., Rolain, J.M. and Arg-annot. 2014. A new bioinformatic tool to discover antibiotic resistance genes in bacterial genomes. *Antimicrob. Agents Chemother.* 58: 212–220.
- Harborne, J. B. 1984. Phytochemical Methods a Guide to Modern Techniques of Plant Analysis. 2<sup>nd</sup> ed. *Chapman and Hall.* New York.
- Harir, M., Bendif, H., Bellahcene, M., Fortas, Z. and Pogni, R. 2018. Basic biology and aplications of Actinobacteria : *Streptomyces* secondary metabolites. *IntechOpen* 6: 99 -122.
- Huang, Y., Zhang, L., Tiu, L., and Wang, H. H. 2015. Characterization of antibiotic resistance in commensal bacteria from an aquaculture ecosystem. *Front.Microbiol.* 6: 914
- Houssen, W. E. and Jaspars, M. 2006. Natural Products Isolation 2nd ed: Isolation of Marine Natural Product. *Humana Press Inc.* Totowa, New Jersey.

- Hur, G.H., C.R. Vickery, and M.D. Burkart. 2012. Explorations of catalytic domains in non-ribosomal peptide synthetase enzymology. *Nat. Prod. Rep.* 29: 1074-1098.
- Hong, K., Gao, A. H., Xie, Q. Y., Gao, H., Zhuang, L., Lien, H. P., Yu, H. P., Li, J., Yao, X. S. and Goodfellow, M. 2009. Actinomycetes for marine drug discovery isolated from mangrove soils and plants in China. *Mar. Drugs* 7: 24 – 44.
- Ishimaru, K., M. Agawa-Matsushita and Muroga. 1996. *Vibrio Ichtiyoenteri* sp. nov., a pathogen of Japanese flounder (*Paralichthys olivaceus*). *Int. Journal of Systematic Bacteriology.* 46: 155-159.
- Jacoby, G. A. and Hooper, D. C. 2012. Antibiotic discovery and development : An review of quinolone family. *Springer*, New York. pp: 119 – 146.
- Jayasree, Janakiram, P., Madhavi, R. 2006. Characterization of *Vibrio* spp. associated with diseased shrimp from culture ponds of Andhr Pradesh (India). *J. World Aqua Soc.* 37: 523–532.
- Jia, B. Raphenya, A.R. Alcock, B. Waglechner, N. Guo, P. Tsang, K.K. Lago, B.A. Dave, B.M. Pereira, S., Sharma, A.N. 2017. Expansion and model-centric curation of the comprehensive antibiotic resistance database. *Nucleic Acids Res.* 45: 566–573.
- Jiang, Y., Li, Q., Chen, X., Jiang, C. 2016. Isolation and cultivation methods of Actinobacteria. Chapter 2 in *Actinobacteria-basics and Biotechnological Application. InTech.* London, UK. pp: 39 – 57.
- Kasanah, Noer and Triyanto. 2019. Bioactivities of halometabolites from marine Actinobacteria. *Biomolecules* 9: 225 – 243.
- Lee, Y.K., Lee, J.H., Lee, H.K. 2001. Microbiol symbiosis in marine sponge. *J. Microbiol.* 39:254–264.
- Le-Roux, F., Wegner, K.M., Baker-Austin, C., Vezzulli, L., Osorio, C.R., Amaro, C. 2015. The emergence of *Vibrio* pathogens in Europe: ecology, evolution, and pathogenesis. *Front. Microbiol.* 6: 830
- Letchumanan, V., Chan, K.-G., and Lee, L.-H. 2015. An insight of traditional plasmid curing in *Vibrio* species. *Front. Microbiol.* 6:735
- Liu, Y., Li, X.M., Meng, L.H., Jiang, W.L., Xu, G.M., Huang, C.G., Wang, B. 2015. Bisthiodiketopiperazines and acorane sesquiterpenes produced by the marine-derived fungus *Penicillium adametzioides* AS-53 on different culture media. *J. Nat. Prod.* 78: 1294–1299.
- Macintyre, L., T. Zhang, C. Viegelmann, I.J. Martinez, C. Cheng, C. Dowdells. 2014. Metabolomic tools for secondary metabolite discovery from marine microbial symbionts *Mar. Drugs*, 12: 3416-3448.
- Maldonado, L.A., Stach, J.E., Pathom-aree, W., Ward, A.C., Bull, A.T., Goodfellow, M., 2005. Diversity of cultivable Actinobacteria in geographically widespread marine sediments. *Antonie Van Leeuwenhoek.* 87: 11–18.
- Manivasagan, P., Kang, K. H., Shivakumar, K., Li-Chan, E. C., Oh, H. M., and Kim, S. K. 2014. Marine actinobacteria : An important source of bioaktive natural products. *Environ. Toxicol. Pharmacol.* 38: 172 – 188.

- Martins, A., Vieira, H., Gaspar, H., Santos, S. 2014. Marketed marine natural products in the pharmaceutical and cosmeceutical industries: Tips for success. *Mar. Drugs.*, 12: 1066–1101.
- Marmann, A., Aly, A.H., Lin, H., Wang, B., Proksch, P. 2014. Co-cultivation-A powerful emerging tool for enhancing the chemical diversity of microorganisms. *Mar. Drugs* 12: 1043-1065.
- Moffit, M.C. and Neilan, B.A. 2003. Evolutionary affiliations within the superfamily of ketosynthases reflect complex pathway associations. *J. Mol. Evol.* 56: 446–457.
- Motohashi, K., Takagi, M., Shun-Ya, K. 2010. Tetrapeptides possessing a unique skeleto, JBIR-34 and JBIR-35, isolated from a sponge-derived Actinomycetes, *Streptomyces* sp. Sp.080513GE23. *J. Nat. Prod.* 73: 226 – 228.
- Müller, W.E.G., Grebenjuk, V.A., Thakur, N.L., Thakur, A.N., Batel, R. 2004. Oxygencontrolled bacterial growth in the sponge *Suberites domuncula*: toward a molecular understanding of the symbiotic relationships between sponge and bacteria. *Appl. Environ. Microbiol.* 70: 2332-2341.
- Murniasih T, Rasyid A. 2010. Potensi bakteri yang berasosiasi dengan spons asal Barrang Lompo (Makassar) sebagai sumber bahan antibakteri. *Oceanol. Limnol. Indones.* 36: 281–292.
- Park, Jin-soo and Kwon, H. C. 2018. New naphthoquinone terpenoids from marine Actinobacterium, *Streptomyces* sp. CNQ-509. *Mar. Drugs* 16: 90 – 99.
- Paulus, C., Rebets, Y., Tokovenko, B., Nadmid, S., Terekhova, L.P., Mironovskiy, M., Zotchev, S.B., Ruckert, C., Braig, S., Zahler, S., Kalinowski, J. and Luzhetskyy, A. 2017. New natural products identified by combined genomics-metabolomics profiling of marine *Streptomyces* sp. MP131-18. *Sci. Rep.* 7: 423 - 432.
- Poulsen, F. M. 2002. A brief introduction to NMR spectroscopy of proteins. *Duke educ.* 7: 1 – 33.
- Prieto, C., Gasria-Estrada, C., Lorenzana, D., and Martin, J.F., 2012. NRPSsp: nonribosomal peptide synthase substrate predictor. *Bioinformatics* 28: 426-427.
- Radjasa, O.K., Salasia, S.I.O., Sabdono, A., Weisei, J., Imhov, J.F., Lämmler, C., Risk, M.J. 2007. Antibacterial activity of marine bacterium *Pseudomonas* sp. associated with soft coral *Sinularia polydactyla* against *Streptococcus equi* subsp. *zooepidemicus*. *Int. J. Pharmacol.* 3: 170–174.
- Raju, R., Khalil, Z.G., Piggott, A.M., Blumenthal, A., Gardiner, D.L., Skinner-Adams, T.S., Capon, R.J. 2014. Mollemycin A: An antimalarial and antibacterial glycohexadepsipeptide-polyketide from an Australian marine-derived *Streptomyces* sp. (CMBM0244) *Org. Lett.* 16: 1716-1719.
- Reen, F.J., Romano, S., Dobson, D.W., O’Gara, F. 2015. The sound of silence: Activating silent biosynthetic gene clusters in marine microorganisms. *Mar Drugs* 13: 4754-4783.

- Rigonato, J., Kent, A.D., Alvarenga, D.O., Thiago Gumiere, L.H.Z., Branco, F.D. Andreote, M.F and Fiore. 2017. Temporal assesment of microbial communities in soils of two contrasting mangroves. *Bra.z J. Microbiol.*, <http://dx.doi.org/10.1016/j.bjbm.2017.04.008>.
- Rini, A. F. 2017. Potensi bakteri penghasil senyawa bioaktif yang berasosiasi dengan spons sebagai biokontrol vibriosis pada udang vaname. *Tesis*. IPB : Bogor.
- Romano, S., Jackson, S. A. and Sloane, P. 2018. extending the one strain many compounds (OSMAC) principle to marine microorganism. *Mar. Drugs*. 12: 3046-3059.
- Saha, M., Pramanik, A. and Sana, B. 2012. Marine microbiology : Bioactive compounds and biotechnological applications. *Willey-VCH*. pp: 187 – 201.
- Sarkar, S., Roy, D. and Mukherjee, J. 2010. Production of potentially novel antimicrobial compouond by biofilm-forming marine *Streptomyces* sp. in niche-mimic rotating disk bioreactor. *Bioprocess Biosyst. Eng.* 33: 207 – 217.
- Sarker, S.D., Zahid, Latif., and Gray, A.I. 2006. Natural Products Isolation 2nd ed: An Overview. *Humana Press Inc.* Totowa, New Jersey.
- Scheiner, S., Kar, T., Pattanyak, J. 2002. Comparison of various types of hidrogen bonds involving aromatic amino acids. *J. Am. Chem. Soc.* 44: 13257 – 13264.
- Schinke, Claudia., Martins., T., Queiroz, S.C.N., Melo, I. S. and Reyes. F.G.R. 2017. Antibacterial compounds from marine bacteria. *J. Nat. Prod.* 80: 1215 – 1228.
- Schwarez, D., Finking, R., Marahiel, M.A. 2003. Nonribosomal peptides: From genes to products. *Nat. Rep. Prod.* 20: 275-287.
- Seidel, Veronique. 2006. Natural Products Isolation 2nd ed: Initial and Bulk Extraction. *Humana Press Inc.* Totowa, New Jersey.
- Shen, Q.T., Chen, X.L., Sun, C.Y., Zhang, Y.Z. 2004. Dissecting and exploiting nonribosomal peptide synthase. *Acta Biochim Biophys Sinica* 36: 243–249.
- Shingh, S. B., Young, K. and Silver, L. L. 2017. What is an ideal antibiotic? discovery challenges and path forward. *Biochem. Pharmacol.* 133: 63 – 73.
- Shukla, S., Shukla, H. and Pandey, A. K. 2013. Optimization of various parameters for production of antimicrobial compounds by *Fusarium roseum* Fgccc61. *Journal of Pharmacy and Pharmacheutical Science.* 3: 12 – 16.
- Soto-Rodriguez, S.A., Gomez-Gil, B., LozanoOlvera, R., Betancourt-Lozano, M., Morales-Covarrubias, M.S. 2015. Field and experimental evidence of *Vibrio parahaemolyticus* as the causative agent of acute hepatopancreatic necrosis disease of cultured shrimp (*Litopenaeus vannamei*) in northwestern Mexico. *Appl. Environ. Microbiol.* 81: 1689 – 1699.
- Spangenberg, B., Poole, C.F. and Weins, C. 2011. Quantitative Thin Layer Chromatography : Specifif Staining Chromatography. *Springer-Verlag* : Berlin Heidelberg.
- Starkey, L. S. 2018. Introduction to strategies for organic synthesis, 2nd ed : H-NMR chemical shifts. *John Wiley & Sons, Inc.* 5: 1 – 432. New York.
- Strandberg, E. and Ulrich, A. S. 2004. NMR Methods for Studying Membrane Active Antimicrobial Peptides. *Wiley interscience* 2: 89 – 120.

- Subrahmani, Ramesh and Sipkema, D. 2019. Marine rare Actinomycetes : A promising source of structurally diverse and unique novel natural products. *Mar. Drugs* 17: 249 – 289.
- Sujatha, G., Venkateshan, M., Bapiraju, P., Premkumar, J., Ellaiah, P., Zeeck, A. 2005. Cytotoxic compounds from the marine actinobacterium *Streptomyces corchorusii* AUBN1/71. *Russ. J. Bioorg. Chem.* 32: 295–300.
- Susila, W. A. 2018. Deteksi gen *non-ribosomal peptide (nrps)* pada marine Aktinobakteria yang berasosiasi dengan spons dan aktivitas metabolitnya pada *Vibrio*. *Tesis*. UGM : Yogyakarta.
- Tasdemir, D., Topaloglu, B., Perozzo, R., Brun, R., O'Neill, R., Carballeira, N.M., Zhang, X., Tonge, P.J., Linden, A., Rüedi, P. 2007. Marine natural products from the turkish sponge *Agelas oroides* that inhibit the enoyl reductases from *Plasmodium falciparum*, *Mycobacterium tuberculosis* and *Escherichia coli*. *Bioorg. Med. Chem.* 15: 6834–6845.
- Taurino, C., Frattini, L., Marcone, G. L., Gastaldo, L. and Marinelli, F. 2011. *Acinoplanes teichomycetius* ATCC 31121 as a cell factory for producing teicoplanin. *Microbial cell factories*. 10: 76-82.
- Taylor, M.W., Radax, R., Steger, D., Wagner, M. 2007. Sponge-associated microorganisms: evolution, ecology, and biotechnological potential. *Microbiol. Mol. Biol. Rev.* 71: 295–347.
- Toranzo, A.E. 2004. Virulence factor of bacteria pathogenic for cold water fish. *Annu. Rev. Fish Disease* 3: 5 - 36.
- Tracanna, V., De Jong, A., Medema, M.H., Kuipers, O.P. 2017. Mining prokaryotes for antimicrobial compounds: From diversity to function. *FEMS Microbiol. Rev.* 41: 417–429.
- Vega-Avila, E and Pugsley, M. K. 2011. An overview of colorimetric assay methods used to assess survival or proliferation of mammalian cells. *Proc. West. Pharmacol. Soc.* 54: 10 – 14.
- Vezzulli, L., Brettar, I., Pezzati, E., Reid, P.C., Colwell, R.R., Ghofle, M. 2012. Long-term effects of ocean warming on the prokaryotic community: evidence from the vibrios. *ISMEJ.* 6: 21–30.
- Vijayakumari, S. J., Sashidaranair, N. K., Mohanandas, C. 2012. Optimization of media and temperature for enhanced antimicrobial production by bacteria associated with *Rhabditis* sp. *Iran J. Microbiol* 5: 136 – 141.
- Wang, Y., Wang, L., Zhuang, Y., Kong, F., Zhang, C. 2014. Phenolic polyketides from the co-cultivation of marine-derived *Penicillium* sp. WC-29-5 and *Streptomyces fradiae* 007. *Mar Drugs* 12: 2079-2088.
- Waters, A. L., Peraud, O., Kasanah, N., Sims, J. W., Kothalawala, N., Anderson, M. A., Abbas, S. H., Rao, V. R., Jupally, V. R., Kelly, M., Dass, A., Hill, R. T. and Hamman, M. T. 2014. An analysis of the sponge *Acanthostrongylophora ingens* microbiome yields and Actinomycete that produces the natural product manzamine A. *Front. Mar. Sci.* 1: 1-15.
- Weber, T., Blin, K., Duddela, S., Krug, D., Kim, H.U., Brucoleri, R., Lee, S.Y., Fischbach, M.A., Müller, R., Wohlleben, W. 2015. Antismash 3.0-a comprehensive resource for the genome mining of biosynthetic gene clusters. *Nucleic Acids Res.* 43: 237 – 243.

- Williams, P.G., Miller, E.D., Asolkar, R.N., Jensen, P.R., Fenical, W., 2007b. Arenicolides AC, 26-membered ring macrolides from the marine actinomycete *Salinispora arenicola*. *J. Org. Chem.* 72: 5025–5034.
- Wu, Q., Zhang, G., Wang, B., Li, X., Yue, X., Chen, J., Zhang, H. and Wang, H. 2018. Production and identification of inthomycin B produced by a deep-sea sediment derived *Streptomyces* sp. YB104 based on cultivation-dependent approach. *Curr. Microbiol.* Pp: 1-10.
- Xin, Wenxiu., Ye, X. and Zhang, Z. 2012. New capoamycin-type antibiotics and polyene acids from marine *Streptomyces fradiae* PTZ0025. *Mar. Drugs* 10: 2388 – 2402.
- Xu, Z., Jakobi, K., Welzel, K., Hertweck, C., 2005. Biosynthesis of the antitumor agent Chartreusin involves the oxidativerearrangement of an anthracyclic polyketide. *Chem. Biol.* 12: 579–588.
- Xu, J. 2009. *Streptomyces xiamenensis* sp. nov., isolated from mangrove sediment. *Int. J. Syst. Evol. Microbiol.* 59: 472-476.
- Zhang, W., Li, S., Zhu, Y., Chen, Y., Chen, Y., Zhang, H., Zhang, G., Tian, X., Pan, Y., Zhang, S. 2014. Heronamides D-F, polyketide macrolactams from the deep-sea-derived *Streptomyces* sp. SCSIO 03032. *J. Nat. Prod.* 77: 388–391.
- Zhu, Y., Zhang, W., Chen, Y., Yuan, C., Zhang, H., Zhang, G., Ma, L., Zhang, Q., Tian, X., Zhang, S. 2015. Characterization of heronamide biosynthesis reveals a tailoring hydroxylase and indicates migrated double bonds. *Chem. Bio.* 16: 2086–2093.
- Zucko, J., Skunca, N., Curk, Zupans, B., Long, P.F. 2007. Polyketide synthase genes and the natural products potential of *Dyctiostelium discoideum*. *Bioinformatic.* 23: 2543-2549.