

DAFTAR PUSTAKA

- Ahmad SJ, Rahim A, Hanizam MB, Baharum SN, Baba MS, Zin NM. 2017. Discovery of Anti-*Plasmodium* Drugs from Streptomycetes Metabolites Using a Metabolomic Approach. *Journal of tropical medicine*. 1-7.
- Al-Dhabi NA, Ghilan AK, Esmail GA, Arasu MV, Duraipandiyan V, Ponmurugan K. 2019. Bioactivity assessment of the Saudi Arabian Marine *Streptomyces* sp. Al-Dhabi-90, metabolic profiling and its in vitro inhibitory property against multidrug resistant and extended-spectrum beta-lactamase clinical bacterial pathogens. *Journal of Infection and Public Health*. 12(4): 549-56.
- Audrain B, Farag MA, Ryu CM, Ghigo JM. 2015. Role of bacterial volatile compounds in bacterial biology. *FEMS Microbiology Reviews*. 39(2): 222-233.
- Baltz RH. 2017. Gifted microbes for genome mining and natural product discovery. *Journal of industrial microbiology & biotechnology*. 44(4-5):573-88.
- Barnes KI. 2011. Anti-*Plasmodium* drugs and the control and elimination of malaria. In Staines HM, Krishna S, editors. *Treatment and Prevention of Malaria*. Basel: Springer. p. 1-17.
- Boyom FF, Ngouana V, Zollo PHA, Menut C, Bessiere JM, Gut J, Rosenthal PJ. 2003. Composition and anti-plasmodial activities of essential oils from some Cameroonian medicinal plants. *Phytochemistry*. 64(7): 1269-1275.
- Buedenbender L, Robertson L, Lucantoni L, Avery V, Kurtböke D, Carroll A. 2018. HSQC-TOCSY Fingerprinting-Directed Discovery of Antiplasmodial Polyketides from the Marine Ascidian-Derived *Streptomyces* sp. (USC-16018). *Marine drugs* 16(6): 189 – 200.
- Campbell WE, Gammon DW, Smith P, Abrahams M, Purves TD. 1997. Composition and anti-*Plasmodium* activity in vitro of the essential oil of *Tetradenia riparia*. *Planta Medica*. 63(03): 270-272.
- Carballeira NM. 2008. New advances in fatty acids as antimalarial, antimycobacterial and antifungal agents. *Progress in lipid research*. 47(1): 50-61.
- Claeson AS, Sunesson AL. 2005. Identification using versatile sampling and analytical methods of volatile compounds from *Streptomyces albidoflavus*

grown on four humid building materials and one synthetic medium. Indoor air. 15(9): 41- 47.

Cordovez V, Carrion VJ, Etalo DW, Mumm R, Zhu H, Van Wezel GP, Raaijmakers JM. 2015. Diversity and functions of Senyawa organik volatil produced by *Streptomyces* from a disease-suppressive soil. *Frontiers in microbiology*. 6: 1 - 13.

Danaei M, Baghizadeh A, Pourseyedi S, Amini J, Yaghoobi MM. 2014. Biological control of plant fungal diseases using volatile substances of *Streptomyces* griseus. *European Journal of Experimental Biology*. 4(1): 334-339.

Delves M, Plouffe D, Scheurer C, Meister S, Wittlin S, Winzeler EA, Sinden RE, Leroy D. 2012. The activities of current anti-*Plasmodium* drugs on the life cycle stages of *Plasmodium*: a comparative study with human and rodent parasites. *PLoS medicine*. 9(2): 1-14.

Dharmaraj S. 2010. Marine *Streptomyces* as a novel source of bioactive substances. *World Journal of Microbiology and Biotechnology*. 26(12): 2123-2139.

Duffy S, Avery VM. 2018. Routine In Vitro Culture of *Plasmodium falciparum* : Experimental Consequences?. *Trends in Parasitology*, 34(7): 564–575

Farida Y, Widada J, Meiyanto E. 2007. Combination methods for screening marine actinomycetes producing potential compounds as anticancer. *Indonesian Journal of biotechnology*. 12(2). 988-997

Fujisaki R, Kamei K, Yamamura M, Nishiya H, Inouye S, Takahashi M, Abe S. 2012. In vitro and in vivo anti-plasmodial activity of essential oils including hinokitiol. *The Southeast Asian Journal of Tropical Medicine and Public Health*. 43(2): 270-279.

Gerald N, Mahajan B, Kumar, S. 2011. Mitosis in the human malaria parasite *Plasmodium falciparum*. *Eukaryotic cell*. 10(4): 474-482.

Gerber NN. 1968. Geosmin, from microorganisms, is trans-1, 10-dimethyl-trans-9-decalol. *Tetrahedron Letters*. 9(25): 2971-2974.

Gesase S, Gosling RD, Hashim R, Ord R, Naidoo I, Madebe , Mosha JF, Joho A, andia V, Mrema H, Mapunda E, Savael Z, Lemnge M, Mosha FW, Greenwod B, Roper C, Chandramohan D. 2009. High resistance of *Plasmodium falciparum* to sulphadoxine/pyrimethamine in northern Tanzania and the emergence of dhps resistance mutation at Codon 581. *PLoS One*. 4(2): 1-13.

- Guerrero-Garzón JF, Zehl M, Schneider O, Rückert C, Busche T, Kalinowski J, Bredholt H, Zotchev SB. 2020. *Streptomyces* spp. From the Marine Sponge *Antho dichotoma*: Analyses of Secondary Metabolite Biosynthesis Gene Clusters and Some of Their Products. *Frontiers in microbiology*. 11: 1-15.
- Gürtler H, Pedersen R, Anthoni U, Christophersen C, Nielsen PH, Wellington EM, Pedersen C, Bock K. 1994. Alabaflavenone, a sesquiterpene ketone with a zizaene skeleton produced by a streptomycete with a new rope morphology. *The Journal of antibiotics*. 47(4): 434-439.
- Haldar K, Bhattacharjee S, Safeukui I. 2018. Drug resistance in *Plasmodium*. *Nature Reviews Microbiology*. 16(3): 156 – 170.
- Herdini C, Hartanto S, Mubarika S, Hariwiyanto B, WijayantiN, Hosoyama A, ... & Widada J. 2017. Diversity of Nonribosomal Peptide Synthetase Genes in the Anticancer Producing Actinomycetes Isolated from Marine Sediment in Indonesia. *Indonesian Journal of Biotechnology*. 20(1): 34-41.
- Ian E, Malko DB, Sekurova, ON, Bredholt H, Ruckert C, Borisova ME. 2014. Genomics of sponge-associated *Streptomyces* spp. closely related to *Streptomyces albus* J1074: insights into marine adaptation and secondary. 9(5): e96719.
- Ikeda H, Ishikawa J, Hanamoto A, Shinose M, Kikuchi H, Shiba T, Sakaki Y, Hattori M, Ōmura S. 2003. Complete genome sequence and comparative analysis of the industrial microorganism *Streptomyces avermitilis*. *Nature Biotechnology*. 21(5): 526-531.
- Jacek AK, Pawliszyn J. 2001. Air Sampling and Analysis of Volatile Organic Compounds with Solid Phase Microextraction, *Journal of the Air and Waste Management Association*. 51(2): 173-184
- Jang JW, Kim JY, Yoon J, Yoon SY, Cho CH, Han ET, An SS, Lim CS. 2014. Flow Cytometric enumeration of parasitemia in cultures of *Plasmodium falciparum* stained with SYBR Green I and CD235A. *The Scientific World Journal*. 1-14.
- Jiang J, He X, Cane DE. Biosynthesis of the earthy odorant geosmin by a bifunctional *Streptomyces coelicolor* enzyme. 2007. *Nature Chemical Biology*. 3(11): 711-715.
- Jiang J, He X, Cane DE. 2006. Geosmin biosynthesis. *Streptomyces coelicolor* germacradienol/germacrene D synthase converts farnesyl diphosphate to geosmin. *Journal of the American Chemical Society*. 128(25): 8128-8129.

- Karunajeewa HA 2011. Artemisinins: artemisinin dihydroartemisinin artemether and artesunate. In Staines HM, Krishna S, editors. Treatment and Prevention of Malaria. Basel: Springer. p. 157-190.
- Kumar V, Bharti A, Gusain O, Bisht GS. 2011. Scanning electron microscopy of *Streptomyces* without use of any chemical fixatives. *Scanning*. 33(6): 446-449.
- Kumaratilake LM, Robinson BS, Ferrante A, Poulos A. 1992. Antimalarial properties of n-3 and n-6 polyunsaturated fatty acids: in vitro effects on *Plasmodium falciparum* and in vivo effects on *P. berghei*. *Journal of Clinical Investigation*. 89: 961-967.
- Laouer H, Hirèche-Adjal Y, Prado S, Boulaacheb N, Akkal S, Singh G, Singh P, Isidorov VA, Szczepaniak L. 2009. Chemical composition and antimicrobial activity of essential oil of *Bupleurum montanum* and *B. plantagineum*. *Natural Product Communications*. 4: 1-6.
- Li Q, Ning P, Zheng L, Huang J, Li G, Hsiang T. 2012. Effects of volatile substances of *Streptomyces globisporus* JK-1 on control of *Botrytis cinerea* on tomato fruit. *Biological Control*. 61(2):113-120.
- Lisewski AM, Quiros JP, Mittal M, Putluri N, Sreekumar A, Haeggström JZ, Lichtarge O. 2018. Potential role of *Plasmodium falciparum* exported protein 1 in the klorokuin mode of action. *International Journal for Parasitology: Drugs and Drug Resistance*. 8(1): 31-35.
- Maskey RP, Helmke E, Kayser O, Fiebig HH, Maier A, Busche A, Laatsch H. 2004. Anti-cancer and antibacterial trioxacarcins with high anti-malaria activity from a marine streptomycete and their absolute stereochemistry. *The Journal of antibiotics*. 57(12): 771-779.
- Matthews H, Duffy CW, Merrick CJ. 2018. Checks and balances? DNA replication and the cell cycle in *Plasmodium*. *Parasites & vectors*. 11(1): 1-13.
- Medema MH, Kottmann R, Yilmaz P, Cummings M, Biggins JB, Blin K, De Bruijn I, Chooi YH, Claesen J, Coates RC, Cruz-Morales P. 2015. Minimum information about a biosynthetic gene cluster. *Nature Chemical Biology*. 11(9): 625-31.
- Mokgethi-Morule T, DN'Da David. 2016. Cell based assays for anti-*Plasmodium* activity evaluation. *European Journal of Pharmaceutical Sciences*. 84: 26-36.
- Mota ML, Lobo LT, da Costa JM, Costa LS, Rocha HA, e Silva LF, Pohlit AM, de Andrade Neto VF. 2012. In vitro and in vivo antimalarial activity of essential

oils and chemical components from three medicinal plants found in northeastern Brazil. *Planta Medica*. 78(7): 658-64.

Moody SC, Zhao B, Lei L, Nelson DR, Mullins JG, Waterman MR, Kelly SL, Lamb DC. 2012. Investigating conservation of the albaflavenone biosynthetic pathway and CYP170 bifunctionality in streptomycetes. *The FEBS journal*. 279(9):1640-9.

Müller IB, Hyde JE. 2010. Anti-*Plasmodium* drugs: modes of action and mechanisms of parasite resistance. *Future microbiology*. 5(12): 1857-1873.

Mustofa SE, Wahyuono S. 2007. In vitro and in vivo antiplasmodial activity and cytotoxicity of extracts of *Phyllanthus niruri* L. herbs traditionally used to treat malaria in Indonesia. *The Southeast Asian Journal of Tropical Medicine and Public Health*. 38(4): 609-615.

Okokon JE, Antia BS, Mohanakrishnan D, Sahal D. 2017. Antimalarial and antiplasmodial activity of husk extract and fractions of *Zea mays*. *Pharmaceutical Biology*. 55(1): 1394-1400.

Pandey N, Pandey-Rai S. 2016. Updates on artemisinin: an insight to mode of actions and strategies for enhanced global production. *Protoplasma*. 253(1): 15-30.

Paulus C, Rebets Y, Tokovenko B, Nadmid S, Terekhova LP, Myronovskiy M, Zotchev SB, Ruckel C, Braig S, Kalinowski J, Luzhetskyy. 2017. New natural products identified by combined genomics-metabolomics profiling of marine *Streptomyces* sp. MP131-18. *Scientific Reports*. 7: 1-11.

Raju R, Khalil ZG, Piggott AM, Blumenthal A, Gardiner DL, Skinner-Adams TS, Capon RJ. (2014). Mollemycin A: An anti-*Plasmodium* and antibacterial glyco-hexadepsipeptide-polyketide from an Australian marine-derived *Streptomyces* sp.(CMB-M0244). *Organic Letters*. 16(6): 1716-1719.

Reen FJ, Romano S, Dobson ADW, O’Gara F. 2015. The sound of silence: Activating silent biosynthetic gene clusters in marine microorganisms. *Marine Drugs*, 13(8), 4754–4783.

Sarmiento-Vizcaíno A, Braña AF, González V, Nava H, Molina A, Llera E, Fiedler HP, Rico JM, García-Flórez L, Acuña JL, García LA. 2016. Atmospheric dispersal of bioactive *Streptomyces albidoflavus* strains among terrestrial and marine environments. *Microbial Ecology*. 71(2): 375-86.

- Schöller CE, Gürtler H, Pedersen R, Molin S, Wilkins K. 2002. Volatile metabolites from actinomycetes. *Journal of Agricultural and Food Chemistry*. 50(9): 2615-2621.
- Schulz S, Dickschat JS. 2007. Bacterial volatiles: the smell of small organisms. *Natural product reports*. 24(4): 814-842.
- Schulz-Bohm K, Martín-Sánchez L, Garbeva P. 2017. Microbial volatiles: small molecules with an important role in intra-and inter-kingdom interactions. *Frontiers in Microbiology*. 8: 1-10.
- Shetty N, Dong W, Delgado E, Basik AA, Betin KS, Yeo TC, Sacchettini J, Williams Jr H, Baker D. 2015. Identification of anti-tubercular Lipophilic natural products from Malaysian *Streptomyces* species. *Journal of Natural Products*. 8: 75-84.
- Sholikhah, E. N., 2010. Anti-*Plasmodium* baru turunan N-Alkil dan N-Benzil 1,10-fenantrolin: Kajian aktivitas in vitro, sitotoksitas, sifat fisika kimia dan profil farmakokinetika. dissertation. Gadjah Mada University, Yogyakarta.
- Suksamrarn A, Buaprom M, Udtip S, Nuntawong N, Haritakun R, Kanokmedhakul S. 2005. Antimycobacterial and antiplasmodial unsaturated carboxylic acid from the twigs of *Scleropyrum wallichianum*. *Chemical and Pharmaceutical Bulletin*. 53(10): 1327-1329.
- Sunesson AL, Nilsson CA, Carlson R, Blomquist G, Andersson B. 1997. Production of volatile metabolites from *Streptomyces albidoflavus* cultivated on gypsum board and tryptone glucose extract agar-Influence of temperature oxygen and carbon dioxide levels. *The Annals of Occupational Hygiene*. 41(4): 393-413.
- Supong K, Thawai C, Suwanborirux K, Choowong W, Supothina S, Pittayakhajonwut P. 2012. Anti-*Plasmodium* and antitubercular C-glycosylated benz [α] anthraquinones from the marine-derived *Streptomyces* sp. BCC45596. *Phytochemistry Letters* 5(3): 651-656.
- Tresner HD, Davies MC, Backus EJ. 1961. Electron microscopy of *Streptomyces* spore morphology and its role in species differentiation. *Journal of Bacteriology*. 81(1):70-79.
- Turalely R, Susidarti RA, Wijayanti MA. 2011. In vivo Antiplasmodial of the Most Active Fraction and Its Compound of Kapur Leaves (*Harmsiopanax aculeatus* Harms) Extract Against *Plasmodium berghei*. *Tropical Medicine Journal*. 1(2): 131-140.

- Tyc O, Song C, Dickschat JS, Vos M, Garbeva P. 2017. The ecological role of volatile and soluble secondary metabolites produced by soil bacteria. *Trends in Microbiology*. 25(4): 280-292.
- Van Vuuren SF, Viljoen AM, Van Zyl RL, Van Heerden FR, Başer KHC. 2006. The antimicrobial anti-*Plasmodium* and toxicity profiles of helihumulone leaf essential oil and extracts of *Helichrysum cymosum* (L.) D. Don subsp. *cymosum*. *South African Journal of Botany*. 72(2): 287-290.
- Voytsekhovskaya IV, Axenov-Gribanov DV, Murzina SA, Pekkoeva SN, Protasov ES, Gamaiunov SV, Timofeyev MA. 2018. Estimation of antimicrobial activities and fatty acid composition of actinobacteria isolated from water surface of underground lakes from Badzheyskaya and Okhotnichya caves in Siberia. *PeerJ*. 6: 1-27.
- Wan M, Li G, Zhang J, Jiang D, Huang HC. 2008. Effect of volatile substances of *Streptomyces platensis* F-1 on control of plant fungal diseases. *Biological Control*. 46(3): 552-559.
- Wang CZ, Wang X, Qiao Z, Li , Li M, Chen Y, Wang Y, Huang, H. Cui. 2013. Antifungal activity of Senyawa organik volatil from *Streptomyces alboflavus* TD-1. *FEMS Microbiol Letter*. 341: 45–51
- Weete JD, Huang WY, Laseter JL. 1979. *Streptomyces* sp: A source of odorous substances in potable water. *Water Air and Soil Pollution*. 11(2): 217-223.
- WHO. 2018. World Malaria Report. Luxemburg
- Wu Y, Yuan JEY, Raza W, Shen Q, Huang Q. 2015. Effects of Senyawa organik volatil from *Streptomyces albulus* NJZSA2 on growth of two fungal pathogens. *Journal of Basic Microbiology*. 55(9): 1104-1117.
- Xing ML, Zheng Y, Deng D, Xu P, Xi M, Li G, Kong, Z. Jiang. 2018. Article Antifungal Activity of Natural Senyawa organik volatils against Litchi Downy Blight Pathogen *Peronophythora litchi*. *Molecules*. 23(358). 1-15.
- Yang M, Lu L, Pang J, Hu Y, Guo Q, Li Z, Wu S, Liu H, Wang C. 2019. Biocontrol activity of Senyawa organik volatil from *Streptomyces alboflavus* TD-1 against *Aspergillus flavus* growth and aflatoxin production. *Journal of Microbiology*. 57(5): 396-404.
- Yang Z, Zhang Z, Sun X, Wan W, Cui L, Zhang X, Cui L, Zhang X, Zhong D, Yan G. 2007. Molecular analysis of klorokuin resistance in *Plasmodium falciparum* in Yunnan Province China. *Tropical Medicine & International Health*. 12(9): 1051-1060.