

DAFTAR PUSTAKA

- Ahmad, F., Ahmad, I., and Khan, M. 2008. Screening of free-living rhizospheric bacteria for their multiple plant growth promoting activities. *Microbiological Research*, **163**: 173-181.
- Ajillogba, C. F., Babalola, O. O., and Ahmad, F. 2013. Antagonistic effects of *Bacillus* species in biocontrol of tomato Fusarium wilt. *Ethno Med*, **7**: 205-216.
- Anith, K., Momol, M., Kloepper, J., Marois, J., Olson, S., and Jones, J. 2004. Efficacy of plant growth-promoting rhizobacteria, acibenzolar-S-methyl, and soil amendment for integrated management of bacterial wilt on tomato. *Plant disease*, **88**: 669-673.
- AVRDC. 2003. Evaluation of Phenotypic and Molecular Criteria for the Identification of *Colletotrichum* Species Causing Pepper Anthracnose in Taiwan. Taiwan: AVRDC- The World Vegetable Center. 92-93.
- Babalola, O. O. 2010. Beneficial bacteria of agricultural importance. *Biotechnology letters*, **32**: 1559-1570.
- Bassler, B. L. 1999. How bacteria talk to each other: regulation of gene expression by quorum sensing. *Current Opinion in Microbiology*, **2**: 582-587.
- Bauer, A., W. Kirby, J.C. Sherris, and M. Turck. 1966. "Antibiotic Susceptibility Testing by a Standardized Single Disk Method". *American Journal of Clinical Pathology* **45**: 493-496.
- Baysal, Ö., Lai, D., Xu, H.-H., Siragusa, M., Çalışkan, M., Carimi, F., Da Silva, J. A. T., and Tör, M. 2013. A proteomic approach provides new insights into the control of soil-borne plant pathogens by *Bacillus* species. *PloS One*, **8**: e53182.
- Beneduzi, A., Ambrosini, A., and Passaglia, L. M. 2012. Plant growth-promoting rhizobacteria (PGPR): their potential as antagonists and biocontrol agents. *Genetics and Molecular Biology*, **35**: 1044-1051.
- Benhamou, N., and Chet, I. 1997. Cellular and Molecular Mechanisms Involved in the Interaction between *Trichoderma harzianum* and *Pythium ultimum*. *Applied and Environmental Microbiology*, **63**: 2095-2099.
- Bertrand, S., Schumpp, O., Bohni, N., Monod, M., Gindro, K., and Wolfender, J.-L. 2013. De novo production of metabolites by fungal co-culture of *Trichophyton rubrum* and *Bionectria ochroleuca*. *Journal of Natural Products*, **76**: 1157-1165.

- Boonchan, S., Britz, M. L., and Stanley, G. A. 2000. Degradation and mineralization of high-molecular-weight polycyclic aromatic hydrocarbons by defined fungal-bacterial cocultures. *Applied and Environmental Microbiology*, **66**: 1007-1019.
- Bradford, M.M., 1976. A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. *Analytical Biochemistry*, **72(1-2)**: 248-254.
- Cerkaukas, R. 2004. Pepper Disease Chilli veinal mottle virus. AVRDC.
- Chakraborty, S., Bhattacharya, S., and Das, A. 2012. Optimization of process parameters for chitinase production by a marine isolate of *Serratia marcescens*. *International Journal of Pharmacy and Biological Sciences*, **2**: 8-20.
- Chang, W.T., Chen, Y.C., and Jao, C.L. 2007. Antifungal activity and enhancement of plant growth by *Bacillus cereus* grown on shellfish chitin wastes. *Bioresource Technology*, **98**: 1224-1230.
- Cugini, C., Calfee, M., Farrow, J. M., Morales, D. K., Pesci, E. C., and Hogan, D. A. 2007. Farnesol, a common sesquiterpene, inhibits PQS production in *Pseudomonas aeruginosa*. *Molecular Microbiology*, **65**: 896-906.
- DePalma, A. 2006. Protein profiling poised to make its mark-Understanding which proteins are expressed under which circumstances. *Genetic Engineering News*, **26**: 30.
- Do, T. T., Nguyen, T. T., Le Nguyen, T. S., and Le, H. T. 2017. Optimization, purification, and characterization of an extracellular antifungal protein from *Serratia marcescens* DT3 isolated from soil in Vietnam. *Turkish Journal of Biology*, **41**: 448-457.
- Dobbelaere, S., Vanderleyden, J., and Okon, Y. 2003. Plant growth-promoting effects of diazotrophs in the rhizosphere. *Critical Reviews in Plant Sciences*, **22**: 107-149.
- dos Reis Almeida, F. B., Cerqueira, F. M., do Nascimento Silva, R., Ulhoa, C. J., and Lima, A. L. 2007. Mycoparasitism studies of *Trichoderma harzianum* strains against *Rhizoctonia solani*: evaluation of coiling and hydrolytic enzyme production. *Biotechnology Letters*, **29**: 1189-1193.
- Duncan, D.B., 1955. Multiple range and multiple F tests. *Biometrics*, **11**: 1-42.
- Dusane, D. H., Matkar, P., Venugopalan, V. P., Kumar, A. R., and Zinjarde, S. S. 2011. Cross-species induction of antimicrobial compounds, biosurfactants and quorum-sensing inhibitors in tropical marine epibiotic bacteria by

pathogens and biofouling microorganisms. *Current Microbiology*, **62**: 974-980.

Fadhil, L., Kadim, A., and Mahdi, A. 2014. Production of chitinase by *Serratia marcescens* from soil and its antifungal activity. *J Nat Sci Res*, **4**: 80-86.

Fatchiyah, A. A., Widyarti, S., and Rahayu, S. 2011. Basic Principles Of Molecular Biology Analysis. Jakarta: Erlangga.

Fernando, W. D., Nakkeeran, S., and Zhang, Y. 2005. Biosynthesis of antibiotics by PGPR and its relation in biocontrol of plant diseases. *PGPR: Biocontrol and Biofertilization*. Springer.

Garbeva, P. v., Van Veen, J., and Van Elsas, J. 2004. Microbial diversity in soil: selection of microbial populations by plant and soil type and implications for disease suppressiveness. *Annu. Rev. Phytopathol.*, **42**: 243-270.

Gaur, A. S. and S. S. Gaur. 2006. *Statistical Methods for Practice and Research: A Guide to Data Analysis Using SPSS*. Sage.

Garrido, C., M Cantoral, J., Carbú, M., E Gonzalez-Rodriguez, V., and Javier Fernandez-Acero, F. 2010. New proteomic approaches to plant pathogenic fungi. *Current Proteomics*, **7**: 306-315.

Gesheva, V., Ivanova, V., and Gesheva, R. 2005. Effects of nutrients on the production of AK-111-81 macrolide antibiotic by *Streptomyces hygroscopicus*. *Microbiological Research*, **160**: 243-248.

Giri, A. V., Anandkumar, N., Muthukumaran, G., and Pennathur, G. 2004. A novel medium for the enhanced cell growth and production of prodigiosin from *Serratia marcescens* isolated from soil. *BMC microbiology*, **4**: 11.

Gutiérrez-Román, M. I., Holguín-Meléndez, F., Dunn, M. F., Guillén-Navarro, K., and Huerta-Palacios, G. 2015. Antifungal activity of *Serratia marcescens* CFFSUR-B2 purified chitinolytic enzymes and prodigiosin against *Mycosphaerella fijiensis*, causal agent of black Sigatoka in banana (*Musa* sp.). *Bio Control*, **60**: 565-572.

Gupta, A., Gupta, R., and Singh, R. L. 2017. *Microbes and Environment. Principles and Applications of Environmental Biotechnology for a Sustainable Future*. Springer. Singapore. **487**

Haggag, W. M., and Mohamed, H. 2007. Biotechnological aspects of microorganisms used in plant biological control. *American-Eurasian Journal of Sustainable Agriculture*, **1**: 7-12.

Harnas, H. 2015. Analisis Protein Diferensial Aktivitas Antagonis Bakteri UBCR_012 terhadap Jamur *Colletotrichum gloeosporioides* pada Berbagai

Sumber Nutrisi Nitrogen dan Karbon. Thesis: Agronomi, Universitas Andalas, Padang.

Indratmi, D. 2012. Penggunaan *Debaryomyces* sp. dan *Schizosaccharomyces* sp. dengan adjuvant untuk pengendalian penyakit antraknosa pada Mangga. *Jurnal Gamma*, **5**: 1-7.

Innerebner, G., Knief, C., and Vorholt, J. A. 2011. Protection of *Arabidopsis thaliana* against leaf-pathogenic *Pseudomonas syringae* by *Sphingomonas* strains in a controlled model system. *Applied and Environmental Microbiology*, **77**: 3202-3210.

Islam, M., Jeong, Y. T., Lee, Y. S., and Song, C. H. 2012. Isolation and identification of antifungal compounds from *Bacillus subtilis* C9 inhibiting the growth of plant pathogenic fungi. *Mycobiology*, **40**: 59-66.

Jemal, F., Didierjean, L., Ghrir, R., Ghorbal, M., and Burkard, G. 1998. Characterization of cadmium binding peptides from pepper (*Capsicum annuum*). *Plant Science*, **137**: 143-154.

Kamensky, M., Ovadis, M., Chet, I., and Chernin, L. 2003. Soil-borne strain IC14 of *Serratia plymuthica* with multiple mechanisms of antifungal activity provides biocontrol of *Botrytis cinerea* and *Sclerotinia sclerotiorum* diseases. *Soil Biology and Biochemistry*, **35**: 323-331.

Karkachi, N. E., Gharbi, S., and Henni, M. K. J. E. 2010. Biological Control of *Fusarium oxysporum* f. sp. *lycopersici* Isolated from. *Research Journal of Agronomy*, **4**: 31-34.

Kurbanoglu, E. B., Ozdal, M., Ozdal, O. G., and Algur, O. F. 2015. Enhanced production of prodigiosin by *Serratia marcescens* MO-1 using ram horn peptone. *Brazilian Journal of Microbiology*, **46**: 631-637.

Kurniasih, R., S. Djauhari., A. Muhibuddin., dan E. P. Utomo. 2014. Pengaruh Sitronelal Serai Wangi (*Cymbopogon winterianus* linn) terhadap Penekanan Serangan *Colletotrichum* sp. pada Tanaman Bawang Daun (*Allium fistulosum* L.). *Jurnal HPT*, **2**: 5-10.

Latifi, A., Foglino, M., Tanaka, K., Williams, P., and Lazdunski, A. 1996. A hierarchical quorum-sensing cascade in *Pseudomonas aeruginosa* links the transcriptional activators LasR and RhIR (VsmR) to expression of the stationary-phase sigma factor RpoS. *Molecular microbiology*, **21**: 1137-1146.

Lin, Y. H., Xu, J. L., Hu, J., Wang, L. H., Ong, S. L., Leadbetter, J. R., and Zhang, L. H. 2003. Acyl-homoserine lactone acylase from *Ralstonia* strain XJ12B represents a novel and potent class of quorum-quenching enzymes. *Molecular Microbiology*, **47**: 849-860.

- Liu, X., Jia, J., Popat, R., Ortori, C. A., Li, J., Diggle, S. P., Gao, K., and Cámara, M. 2011. Characterisation of two quorum sensing systems in the endophytic *Serratia plymuthica* strain G3: differential control of motility and biofilm formation according to life-style. *BMC Microbiology*, **11**: 26.
- Lodish, H. 2004. *Molecular Cell Biology*. New York: W.H. Freeman & Company. **969**
- Lozano-Rodriguez, E., Hernandez, L., Bonay, P., and Carpena-Ruiz, R. 1997. Distribution of cadmium in shoot and root tissues. *Journal of Experimental Botany*, **48**: 123-128.
- Mahneli, R. 2009. Pengaruh Pupuk Organik Cair Dan Agensia Hayati Terhadap Pencegahan Penyakit Antraknosa (*Colletotrichum gloeosporioides* (Penz.) Sacc.) Pada Pembibitan Tanaman Kakao (*Theobroma cacao* L.). [Skripsi]. Medan. Universitas Sumatera Utara. 38 hal.
- Merrick, M., and Edwards, R. 1995. Nitrogen control in bacteria. *Microbiological Reviews*, **59**: 604-622.
- Mycobank. 2016. *Colletotrichum gloeosporioides*. <http://www.mycobank.org/> Diakses tanggal 27 November 2017.
- Mycobank. 2016. *Fusarium oxysporum*. <http://www.mycobank.org/> Diakses tanggal 27 November 2017.
- Mycobank. 2016. *Sclerotium rolfsii*. <http://www.mycobank.org/> Diakses tanggal 27 November 2017.
- Nandhini, S., Sendhivel, V and Babu, S. 2012. Endophytic Bacteria from Tomato and Their Efficacy Against *F. oxysporum* f.sp. *lycopersici*, The Wilt Pathogen. *Journal of Biopesticides*. **5**: 178-185.
- Nelson, D.L. dan Michael M.Cox. 2004. *Lehninger Principles of Biochemistry*. 4th Edition. New York: W.H. Freeman & Company.
- Nourozian, J., Etebarian, H. R., and Khodakaramian, G. 2006. Biological control of *Fusarium graminearum* on wheat by antagonistic bacteria. *Songklanakarin J. Sci. Technol*, **28**: 29-38.
- Oh, D.C., Jensen, P. R., Kauffman, C. A., and Fenical, W. 2005. Libertellenones A–D: Induction of cytotoxic diterpenoid biosynthesis by marine microbial competition. *Bioorganic & Medicinal Chemistry*, **13**: 5267-5273.
- Okay, S., Özdal, M., and Kurbanoglu, E. B. 2013. Characterization, antifungal activity, and cell immobilization of a chitinase from *Serratia marcescens* MO-1. *Turkish Journal of Biology*, **37**: 639-644.

- Okereke, V., and Wokocho, R. 2007. In vitro growth of four isolates of *Sclerotium rolfsii* Sacc in the humid tropics. *African Journal of Biotechnology*, **6**: 1879-1881.
- Ola, A. R., Thomy, D., Lai, D., Brötz-Oesterhelt, H., and Proksch, P. 2013. Inducing secondary metabolite production by the endophytic fungus *Fusarium tricinctum* through coculture with *Bacillus subtilis*. *Journal of Natural Products*, **76**: 2094-2099.
- Ovadis, M., Liu, X., Gavriel, S., Ismailov, Z., Chet, I., and Chernin, L. 2004. The global regulator genes from biocontrol strain *Serratia plymuthica* IC1270: cloning, sequencing, and functional studies. *Journal of Bacteriology*, **186**: 4986-4993.
- Pang, Y., Liu, X., Ma, Y., Chernin, L., Berg, G., and Gao, K. 2009. Induction of systemic resistance, root colonisation and biocontrol activities of the rhizospheric strain of *Serratia plymuthica* are dependent on N-acyl homoserine lactones. *European Journal of Plant Pathology*, **124**: 261-268.
- Paul, D., Kumar, A., Anandaraj, M., and Sarma, Y. 2001. Studies on the suppressive action of fluorescent *Pseudomonas* on *Phytophthora capsici*, the foot rot pathogen of black pepper. *Indian Phytopathology*, **54**: 515.
- Pettit, R. K. 2009. Mixed fermentation for natural product drug discovery. *Applied Microbiology and Biotechnology*, **83**: 19-25.
- Poonpolgul, S., and Kumphai, S. 2007. Chilli pepper anthracnose in Thailand. Country report. In: Oh DG, Kim KT(eds) Abstracts of the First International Symposium on Chilli Anthracnose. National Horticultural Research Institute, Rural Development of Administration, Republic of Korea.
- Prusky, D., Barad, S., Luria, N., and Ment, D. 2014. pH Modulation of Host Environment, a Mechanism Modulating Fungal Attack in Postharvest Pathogen Interactions. *Springer*, **7**: 11-25.
- Rateb, M. E., Hallyburton, I., Houssen, W. E., Bull, A. T., Goodfellow, M., Santhanam, R., Jaspars, M., and Ebel, R. 2013. Induction of diverse secondary metabolites in *Aspergillus fumigatus* by microbial co-culture. *RSC Advances*, **3**: 14444-14450.
- Rokem, J. S., Lantz, A. E., and Nielsen, J. 2007. Systems biology of antibiotic production by microorganisms. *Natural Product Reports*, **24**: 1262-1287.
- Ruiz, B., Chávez, A., Forero, A., García-Huante, Y., Romero, A., Sánchez, M., Rocha, D., Sánchez, B., Rodríguez-Sanoja, R., and Sánchez, S. 2010. Production of microbial secondary metabolites: regulation by the carbon source. *Critical Reviews in Microbiology*, **36**: 146-167.

- Schroeckh, V., Scherlach, K., Nützmann, H.-W., Shelest, E., Schmidt-Heck, W., Schuemann, J., Martin, K., Hertweck, C., and Brakhage, A. A. 2009. Intimate bacterial–fungal interaction triggers biosynthesis of archetypal polyketides in *Aspergillus nidulans*. *Proceedings of the National Academy of Sciences*, **106**: 14558-14563.
- Semangun, H. 2007. Diseases of horticultural crops in Indonesia. Gadjah Mada University Press. Yogyakarta. 845 hal.
- Singh, C., Ramendra, P. S., Pragma, J and Ajay, K. 2017. Optimization of Cultural Conditions for Production of Antifungal Bioactive Metabolite by *Streptomyces* spp. Isolated from Soil. *Int. J. Curr. Microbiol. App. Scie.*, **6**: 386-396.
- Someya, N., Nakajima, M., Hirayae, K., Tadaaki, H., and Akutsu, K. 2001. Synergistic antifungal activity of chitinolytic enzymes and prodigiosin produced by biocontrol bacterium, *Serratia marcescens* strain B2 against gray mold pathogen, *Botrytis cinerea*. *Journal of General Plant Pathology*, **67**: 312-317.
- Soutourina, O. A., and Bertin, P. N. 2003. Regulation cascade of flagellar expression in Gram-negative bacteria. *FEMS Microbiology Reviews*, **27**: 505-523.
- Stockwell, V., Johnson, K., Sugar, D., and Loper, J. 2002. Antibiosis contributes to biological control of fire blight by *Pantoea agglomerans* strain Eh252 in orchards. *Phytopathology*, **92**: 1202-1209.
- Ström, K., Schnürer, J., and Melin, P. 2005. Co-cultivation of antifungal *Lactobacillus plantarum* MiLAB 393 and *Aspergillus nidulans*, evaluation of effects on fungal growth and protein expression. *FEMS Microbiology Letters*, **246**: 119-124.
- Sulastri. 2016. Uji Potensi Antagonis Isolat Bakteri Penghasil Senyawa Antiantraknosa terhadap Beberapa Jamur Fitopatogen. Thesis: Agronomi, Universitas Andalas, Padang. 54 hal.
- Syafriani, E., Riwany, F., Kamelia, R., Ferita, I., Fatchiyah, F. and Jamsari, J., 2016. A Promising Novel Rhizobacteria Isolate UBCR_12 as Antifungal for *Colletotrichum gloeosporioides*. *Research Journal of Pharmaceutical Biological And Chemical Sciences*, **7**: 2202-2209.
- Tariq, M., Hameed, S., Yasmeen, T., Zahid, M., and Zafar, M. 2014. Molecular characterization and identification of plant growth promoting endophytic bacteria isolated from the root nodules of pea (*Pisum sativum* L.). *World Journal of Microbiology and Biotechnology*, **30**: 719-725.

- Than, P., Jeewon, R., Hyde, K., Pongsupasamit, S., Mongkolporn, O., and Taylor, P. 2008. Characterization and pathogenicity of *Colletotrichum* species associated with anthracnose on chilli (*Capsicum* spp.) in Thailand. *Plant Pathology*, **57**: 562-572.
- Thomson, N., Crow, M., McGowan, S., Cox, A., and Salmond, G. 2000. Biosynthesis of carbapenem antibiotic and prodigiosin pigment in *Serratia* is under quorum sensing control. *Molecular Microbiology*, **36**: 539-556.
- Timper, P., Minton, N., Johnson, A., Brenneman, T., Culbreath, A., Burton, G., Baker, S., and Gascho, G. 2001. Influence of cropping systems on stem rot (*Sclerotium rolfsii*), *Meloidogyne arenaria*, and the nematode antagonist *Pasteuria penetrans* in peanut. *Plant Disease*, **85**: 767-772.
- Vinale, F., Ghisalberti, E., Sivasithamparam, K., Marra, R., Ritieni, A., Ferracane, R., Woo, S., and Lorito, M. 2009. Factors affecting the production of *Trichoderma harzianum* secondary metabolites during the interaction with different plant pathogens. *Letters in Applied Microbiology*, **48**: 705-711.
- Walker, V., Couillerot, O., Von Felten, A., Bellvert, F., Jansa, J., Maurhofer, M., Bally, R., Moënné-Loccoz, Y., and Comte, G. 2012. Variation of secondary metabolite levels in maize seedling roots induced by inoculation with *Azospirillum*, *Pseudomonas* and *Glomus* consortium under field conditions. *Plant and Soil*, **356**: 151-163.
- Wang, S.L., Peng, J. H., Liang, T.W and Liu, K.C. 2008. Purification and Characterization of a Chitosanase from *S. marcescens* TKU011. *Carbohydrate Research*, **343**: 1316-1323.
- Wang, K., Yan, P.S. and Cao, L.X. 2014. Chitinase from a novel strain of *Serratia marcescens* JPP1 for biocontrol of aflatoxin: molecular characterization and production optimization using response surface methodology. *BioMed Research International*. **8**.
- Weir, B., Johnston, P., and Damm, U. 2012. The *Colletotrichum gloeosporioides* species complex. *Studies in Mycology*, **73**: 115-180.
- Williamson, N. R., Fineran, P. C., Leeper, F. J., and Salmond, G. P. 2006. The biosynthesis and regulation of bacterial prodiginines. *Nature Reviews Microbiology*, **4**: 887-899.
- Wilson, K., and Walker, J. 2000. *Principles and techniques of practical biochemistry*, Cambridge University Press. **233**
- Wongpia, A., and Lomthaisong, K. 2010. Changes in the 2DE protein profiles of chilli pepper (*Capsicum annuum*) leaves in response to *Fusarium oxysporum* infection. *Science Asia*, **36**: 259-270.

- Xia, J.-L., Xiong, J., Zhang, R.-Y., Liu, K.-K., Huang, B., and Nie, Z.-Y. 2011. Production of Chitinase and its Optimization from a Novel Isolate *Serratia marcescens* XJ-01. *Indian Journal of Microbiology*, **51**: 301-306.
- Xu, Z., Harrington, T. C., Gleason, M. L., and Batzer, J. C. 2010. Phylogenetic placement of plant pathogenic *Sclerotium* species among teleomorph genera. *Mycologia*, **102**: 337-346.
- Yoon, J. B. 2003. Identification of Genetic Resources, Interspecific Hybridization and Genetic Analysis for Breeding Pepper (*Capsicum annuum*) Resistant to Anthracnose. *Breeding Science*, **56**: 120-120.
- Yunasfi. 2002. Faktor-faktor yang mempengaruhi perkembangan penyakit dan Penyakit yang disebabkan oleh jamur. USU Digital Library. <http://library.usu.ac.id/download/fp/fp-yunasfi.pdf> [Diakses tanggal 02 Januari 2017].
- Zarei, M., Aminzadeh, S., Zolgharnein, H., Safahieh, A., Daliri, M., Noghabi, K. A., Ghoroghi, A., and Motallebi, A. 2011. Characterization of a chitinase with antifungal activity from a native *Serratia marcescens* B4A. *Brazilian Journal of Microbiology*, **42**: 1017-1029.
- Zhang, C., Zhang, X., and Shen, S. 2014. Proteome analysis for antifungal effects of *Bacillus subtilis* KB-1122 on *Magnaporthe grisea* P131. *World Journal of Microbiology and Biotechnology*, **30**: 1763-1774.
- Zhang, Y. 2004. Biocontrol of sclerotinia stem rot of canola by bacterial antagonists and study of biocontrol mechanisms involved. Thesis. Winnipeg, Canada: Departement of Plant Science, University of Manitoba. p63
- Zuck, K. M., Shipley, S., and Newman, D. J. 2011. Induced production of N-formyl alkaloids from *Aspergillus fumigatus* by co-culture with *Streptomyces peucetius*. *Journal of Natural Products*, **74**: 1653-1657.

