

**DAFTAR PUSTAKA**

- Abbas, B, 2011, *Prinsip Dasar Kultur Jaringan*, Alfabeta, Bandung.
- Ali, M., Abbasi, B. H., Ali, G. S., 2015, Elicitation of antioxidant secondary metabolites with jasmonates and gibberellic acid in cell suspension cultures of *Artemisia absinthium* L. *Plant Cell, Tissue, and Organ Culture (PCTOC)*, **120**(3), 1099-106.
- Almagro, L., Lopez, P. A. J., Pedreno, M. A., 2011, New method to enhance ajmalicine production in *Catharanthus roseus* cell culture based on the use of cyclodextrins. *Biotechnology Letters*. **33**(2), 381-389.
- Ashari, S., 1995, *Hortikultura Aspek Budidaya*, UI Press, Jakarta.
- Basri, Z., 2004, *Kultur Jaringan Tanaman*, Universitas Tadulako Press, Palu.
- Beyl, C. A., 2005, *Getting Strated with Tissue Culture : Media Preparation, Sterile Technique, and Laboratory Equipment*, CRC Press, USA, 19-36.
- Chattopadhyay, S., Farkya, S., Srivastava, A. K., Bisaria, V. S., 2002, Bioprocess considerations for production of secondary metabolites by plant cell suspension cultures, *Biotechnology Bioprocess Eng*, **7**:138-149.
- Coste, A., Vlase, L., Halmagy, A., Deliu, C., Coldea, G., 2011, Effects of plant growth regulators and elicitors on production of secondary metabolites in shoot cultures of *Hypericum hirsutum* and *Hypericum maculatum*, *Plant Call Tissue Organ Culture*, **106**:279-288.
- Dalimartha, S., 1999, *Atlas Tumbuhan Obat Indonesia*, Jilid 1, Anggota Ikapi, Jakarta.
- Darwati, I., Rahardjo, M., dan Rosita, S.M.D., 2000, Productivity of *Talinum paniculatum* Gaertn. on several organics matter composition, *Jurnal Penelitian Tanaman Industri*, **6**(1), 1-4.
- Djauhariya, E., Hernani., 2004, *Gulma Berkhasiat Obat*, Penebar Swadaya, Jakarta.
- Ghassemi-Golezani, K., Farhangi-Abriz, S., 2019, Biochar alleviates flouride toxicity and oxidative stress in safflower (*Carthamus tinctorius* L.) seedlings, *Chemosphere*, **223**, 406-415.

- Ghulamahdi, M., Aziz, S. A., Bermawie, N., 2007, *Evaluasi Karakter Morfologi, Fisiologi, dan Genetik Pegagan Mendukung Standarisasi Mutu Pegagan*, Lab. Balai Besar dan Pengembangan Pasca.
- Gonzalez-Lamothe, R., Mitchell, G., Gattuso, M., Diarra, M. S., Malouin, F., and Bouarab, K., 2009, *International Journal of Molecular Sciences*, **10**:3400-3419.
- Hariana, A., 2008, *Tumbuhan Obat dan Khasiatnya Seri 3*, Penebar Swadaya, Jakarta.
- Hidayat, E. B., 1995, *Anatomi Tumbuhan Berbiji*, Penerbit ITB, Bandung.
- Hidayat, S., 2005, *Ginseng Multivitamin Alami Berkhasiat*, Penebar Swadaya, Bogor.
- Hu, X. Y., Neill, S. J., Cai, W. M., Tang, Z. C., 2003, Activation of plasma membrane NADPH oxidase and generation of H<sub>2</sub>O<sub>2</sub> mediate the induction of PAL activity and saponin synthesis by endogenous elicitor in suspension-cultured cells of *Panax ginseng*, *J Intergr Plant Biol*, **45**(12), 1434-41.
- Ho, C. L., Qu, J. P., Liu, Y. C., Hung, C. P., Tsai, M. C., Liao, P. C., Wang, E. I. C., Chen, Y. L., and Su, Y. C., 2010, Compositions and in vitro anticancer activities of the leaf and fruits oils of *Litsea cubeba* from Taiwan, *Natural Product Communication*, **5**:617-620.
- Isaac, Tay., 2012, *Saponins : Properties, Applications, and Health Benefits*, Biomedical Books, London.
- Isaac, S, 1992, *Fungal Plant Interactions*. Chapman & Hall. London.
- Itakura, Y., Ichikawa, M., Mori, Y., Okino, R., Udayama, M., and Morita, T., 2001, How to distinguish garlic from the other Allium vegetables, *The Journal Nutrition*, **131**: 963S-967S.
- Khan, M. S., Akhter, T., MubarakAli, D., Hemalatha, S., 2019, An investigation on the role of salicylic acid alleviate the saline stress in rice crop (*Oryza sativa* L.), *Biocatal Agric Biotechnol*, **18**.
- Kim, O. T., Kim, M. Y., Hing, M. H., Ahn, J., Hwany, B., 2004, Stimulation of asiaticoside accumulation in the whole plant culture of *Centella asiatica* L. urban by elicitors, *Plant Call Reports*, **5**(23), 339-344.

- Kim, O. T., Yoo, N. H., Kim, G. S., Kim, Y. C., Bang, K. H., Hyun, D. Y. *et al.*, 2013, Stimulation of Rg3 ginsenoside biosynthesis in ginseng hairy roots elicited by methyl jasmonate, *Plant Cell, Tissue, and Organ Culture (PCTOC)*, **112**(1), 87-93.
- Lambert, E., Ahmad Faizal and Danny Geelen., 2011, Modulation of triterpene saponin production : In vitro cultures, elicitation, and metabolic engineering, *Appl Biochem Biotechnology*.
- Manuhara, Y. S. W., 2014, *Kapita Selektta Kultur Jaringan Tumbuhan*, Airlangga University Press, Surabaya.
- Manuhara, Y. S. W., Kristanti, A. N., Utami, E. S. W., Yachya, Arif, 2015, Effect of sucrose and potassium nitrate on biomass and saponin content of *Talinum paniculatum* Gaertn. hairy root in balloon-type bubble bioreactor, *Asian Pac J Trop Biomed*, **5**(12), 1027-1032.
- Muhallilin, I., 2012, Induksi akar dari eksplan daun ginseng Jawa (*Talinum paniculatum* Gaertn.) dengan zat pengatur tumbuh auksin secara in vitro, *Skripsi*, Program Studi Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.
- Moghadam, Y. A., Piri, K. H., Bahramnejad, B., Habibi, P., 2013, Methyl jasmonate and salicylic acid effects on the dopamine production in hairy cultures of *Portulaca oleracea* (purslan), *Bull. Env. Pharmacol. Life Sci*, **2**(6), 89-94.
- Namdeo, A.G., 2007, Plant cell elicitation for production of secondary metabolites : a review, *Pharmacognosy Reviews*, **1**(1), 69-79.
- Nasir, M., 2001, *Pengantar Pemuliaan Tanaman*, Direktorat Jenderal, Pendidikan Tinggi Departemen Pendidikan Nasional, Jakarta.
- Oksman-Caldentey, K. M., Inze, D., 2004, Plant cell factories in the post-genomic era : New ways to produce designer secondary metabolites, *Trends in Plant Science*, **9**(9), 433-440.
- Parthier, B., Bruckner, C., Dathe, W., Hause, B., Herrmann, G., Knofel, H. D., Kramell, H. M., Kramell, R., Lehmann, J., Miersch, O., Reinbothe, S., 1992, Jasmonate : metabolism, biological activities, and modes of action in senescence and stress responses, *Progress in Plant Growth Regulation*, **13**, 276-285.

- Patel, H., Krishnamurthy, R., 2013, Elicitor in plant tissue culture, *Journal of Pharmacognosy and Phychemistry*, **2**(2), 60-65.
- Pijoto, S., 2006, *Talesom, Sayuran Berkhasiat Obat, Edisi Revisi*, Kanisius, Yogyakarta.
- Poerba, Y. S., 2009, Identifikasi genetik mutan *Talinum paniculatum* jacq. (Gaertn) berdasarkan marka RAPD, *Jurnal Natur Indonesia*, **12**(1), 44-48.
- Rahimi, S., Kim, Y. J., Yang, D. C., 2015, Production of ginseng saponins : elicitation strategy and signal transductions, *Applied Microbiology and Biotechnology*, **2099**(17), 6987-6996.
- Rao, S. R., Ravishankar, G. A., 2002, Plant cell cultures : Chemical factories of secondary metabolites, *Biotechnology Advances*, **20**:101-153.
- Raskin, I., Ribnicky, D., Komarnytsky, S., Ilic, N., Poulev, A. *et al.*, 2002, Plants and human health in the twenty-first century, *Trends in Biotechnology*, **50**:522-531.
- Reinbothe, Christiane, Armin Springer, Iga Sarmol and Steffen Reinbothe., 2009, Plant oxylipins : Role of jasmonic acid during programmed cell death, defence, and leaf senescence, *FEBS Journal*, **276**:4666-4681.
- Saeed, S., Ali, H., Khan, T., Kayani, W., Khan, M. A., 2017, Impacts of methyl jasmonate and phenyl acetic acid on biomass accumulation and antioxidant potential in roots of *Ajuga bracteosa* Wall ex Benth., a high valued endangered medicinal plant, *Physiology and Molecular Biology of Plants*, **23**(1), 229-237.
- Salisbury, F. B., Ross, C.W., 1995, *Fisiologi Tumbuhan Jilid 3*, (Terjemahan D. R. Lukman dan Sumaryono), Penerbit ITB, Bandung.
- Shanks, J. V., Sushil, K. R., 1998, Effect of elicitor dosage and exposure time on biosynthesis of indole alkaloid pathway of *Catharanthus roseus* hairy root culture, *Biotechnology Program*, **14**, 442-449.
- Sharan, S., Sarin, N. B., Mukhopadhyay, K., 2019, Elicitor mediated enhanced accumulation of ursolic acid and eugenol in hairy root cultures of *Ocimum tenuiflorum* L. is age, dose, and duration dependent, *South African Journal of Botany*, **124**, 199-210.

- Sharma, M., Sharma, A., Kumar, A., Basu, S. K., 2011, Enhancement of secondary metabolites in cultured plant cell through stress stimulus, *American Journal of Plant Physiology*, **6**(2), 50-71.
- Simpson, M. G., 2006, *Plant Systematics*, Elsevier Academic Press Publications, London. Page 137.
- Srivastava, S., Srivastava, A. K., 2013, Production of the biopesticide azadirachtin by hairy root cultivation of *Azadirachta indica* in liquid-phase bioreactors, *Appl Biochem Biotechnol*, **171**, 1351-1361.
- Stahl, E., 1985, *Analisis Obat Secara Kromatografi dan Mikroskopi*, Penerjemah : Padmawinata, K. Dan I. Sudiro, ITB, Bandung.
- Suliansyah, 2013, *Kultur Jaringan Tanaman*, Leutikaprio, Yogyakarta.
- Thakur, G. S., Sharma, R., Sanodiya, B. S., Baghel, R., Thakur, R., Singh, B. N. *et al.*, 2013, In vitro induction of tuber formation for the synthesis of secondary metabolites in *Chlorophytum borivilium* Sant. Et Fernand, *African Journal of Biotechnology*, **12**(20).
- Van Steenis, C. G. G. J., 1992, *Flora untuk Sekolah di Indonesia* (terjemahan oleh Moeso Surjowinoto), Pradnya Paramita, Jakarta.
- Van Steenis, C. G. G. J., 2002, *Flora* (terjemahan oleh Moeso Surjowinoto), Pradnya Paramita, Jakarta.
- Vanisree, M., Lee, C., Lo, S., Nalawade, S. M., Lin, C. Y., Tsay, H., 2004, Studies on the production of some important secondary metabolites from medicinal plants by plant tissue cultures, *Bot. Bull. Acad. Sin*, **45**:1-22.
- Walter, T. S., Bais, H. P., Vivanco, J. M., 2002, Jasmonic acid induced hypericin production in cell suspension cultures of *Hypericum perforatum* L. (St. John's wort), *Phytochemistry*, **60**(3), 289-293.
- Wijayakusuma, 1994, *Tanaman Berkhasiat Obat Indonesia, Jilid 3*, Pustaka Kartini, Jakarta.
- Weidhase, R. A., Kramell, H. M., Lehmann, J., Liebisch, H. W., Lerbs, W., Parthier, B., 1987, Methyl jasmonate induced changes in the polypeptide pattern of senescing barley leaf segments, *Plant Sci*, **51**, 177-186.
- Yachya, A., 2012, Pengaruh laju aerasi dan kerapatan inokulum terhadap biomassa dan kandungan saponin akar rambut ginseng Jawa (*Talinum*

*paniculatum* Gaertn.) dalam bioreaktor tipe balon, *Thesis*, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

- Yu K.W., Murthy H.N., Jeong C.S., Hahn E.J. and Park K.Y., 2005, Organic germanium stimulates the growth of ginseng adventitious roots and ginsenoside production, *Elsevier Process Biochemistry*, **40**: 2959-2961.
- Yulia, Wientarsih, I., and Razief, A. N., 2005, The study of phytochemistry of java ginseng compare to korean ginseng, *Journal Agriculture and Rural Development in the Tropics and Subtropics*, 45-49.
- Yusnita, 2003, *Kultur Jaringan Cara Memperbanyak Tanaman secara Efisien*, Agromedia Pustaka, Jakarta.
- Zhao, B., Zhao, W. and Yuan, Z., 2012, Optimization of extraction method for total saponins for *Codonopsis lanceolata*, *Asian Journal Traditional Medicine*, **7**(1), 14-17.
- Zhou, P., Yang, J., Zhu, J., He, S., Zhang, W., Yu, R. *et al.*, 2015, Effects of  $\beta$ -cyclodextrin and methyl jasmonate on the production of vindoline, catharanthine, and ajmalicine in *Catharanthus roseus* cambial meristematic cell cultures, *Applied Microbiology and Biotechnology*, **99**(17), 7035-7045.
- Zulkarnain, 2011, *Kultur Jaringan Tanaman*, Bumi Aksara, Jakarta.
- Zuo, G., Guan, T., Chen, D., Li, C., Jiang, R., Luo, C., *et al.*, 2009, Total saponins of *Panax ginseng* induces K562 cell differentiation by promoting internalization of the erythropoietin receptor, *Am J Chin Med*, **37**(4), 747-57