

DAFTAR PUSTAKA

- Ali, A., Zhang, J., Zhou, M., Chen, T., Shah, L., Rehman, S. U., Hayat, S., Shi, J., & Chen, J. (2021). Chitosan oligosaccharides stimulate the efficacy of somatic embryogenesis in different genotypes of the liriiodendron hybrid. *Forests*, *12*(5).
- Alrawaiq N. S, Abdullah A. (2014) A review of flavonoid querce tin: metabolism, bioactivity and antioxidant properties. *Int J Pharmtech Res* 6(3):933–941
- Altpeter, F., Springer, N. M., Bartley, L. E., Blechl, A. E., Brutnell, T. P., Citovsky, V., Conrad, L. J., Gelvin, S. B., Jackson, D. P., Kausch, A. P., Lemaux, P. G., Medford, J. I., Orozco-Cárdenas, M. L., Tricoli, D. M., Van Eck, J., Voytas, D. F., Walbot, V., Wang, K., Zhang, Z. J., & Stewart, C. N. J. (2016). Advancing Crop Transformation in the Era of Genome Editing. *The Plant Cell*, *28*(7), 1510–1520.
- Anas, A., Ahzan, S., Sabda, D., & Prasetya, B. (2017). Pembuatan Filter Penangkap Emas (Au) Menggunakan Kitin dan Kitosan dari Cangkang Kepiting. *Jurnal Kependidikan Fisika*, *5*(2), 23–30.
- Ariani, R., Anggraito, Y., & Rahayu, E. (2016). Respon Pembentukan Kalus Koro Benguk (*Mucuna pruriens* L.) Pada Berbagai Konsentrasi 2,4-D dan BAP. *Jurnal MIPA*, *39*(1), 20–28.
- Aziz, M. M., Ratnasari, E., & Rahayu, Y. S. (2014). Induksi Kalus Umbi Iles-Iles (*Amorphophallus muelleri*) dengan Kombinasi Konsentrasi 2, 4-D dan BAP Secara In Vitro Callus Induction of Iles-Iles (*Amorphophallus Mueller*) Tuber Using Concentration. *Lentera Bio*, *3*(2), 109–114.
- Baenas, N., García-viguera, C., & Moreno, D. A. (2014). Elicitation: A Tool for Enriching the Bioactive Composition of Foods. *Molecules*, *19*, 13541–13563.
- Bakhtiari, M. A., & Golkar, P. (2022). The Effects of Callus Elicitation on Lepidine, Phenolic Content, and Antioxidant Activity of *Lepidium sativum* L.: Chitosan and Gibberellic Acid. *Journal of Plant Growth Regulation*, *41*(3), 1148–1160.
- Beltrán, N. P., Ruiz-Cruz, S., Cira-Chávez, L. A., Estrada-Alvarado, M. I., Ornelas-Paz, J. D. J., López-Mata, M. A., Del-Toro-Sánchez, C. L., Ayala-Zavala, J. F., & Márquez-Ríos, E. (2015). Total Phenolic, Flavonoid, Tomatine, and Tomatidine Contents and Antioxidant and Antimicrobial Activities of Extracts of Tomato Plant. *International Journal of Analytical Chemistry*, 2015.
- Bovy, A., Schijlen, E., & Hall, R. D. (2007). Metabolic engineering of flavonoids in tomato (*Solanum lycopersicum*): The potential for metabolomics. *Metabolomics*, *3*(3), 399–412.

- Brasili, E., Praticò, G., Marini, F., Valletta, A., Capuani, G., Sciubba, F., Miccheli, A., & Pasqua, G. (2014). A non-targeted metabolomics approach to evaluate the effects of biomass growth and chitosan elicitation on primary and secondary metabolism of *Hypericum perforatum* in vitro roots. *Metabolomics*, *10*(6), 1186–1196.
- Chaudhry, H., Fatima, N., & Ahmad, I. Z. (2015). Evaluation of Antioxidant and Antibacterial Potentials of *Nigella sativa* L. Suspension Cultures under Elicitation. *BioMed Research International*, *2015*(708691), 1–13.
- Chorabik, K., & Pietrzykowski, M. (2019). Ecophysiological aspects of in vitro biotechnological studies using somatic embryogenesis of callus tissue toward protecting forest ecosystems. *Journal of Forestry Research*, *30*(4), 1159–1166.
- Coelho, N., & Romano, A. (2022). Impact of chitosan on plant tissue culture: recent applications. *Plant Cell, Tissue and Organ Culture*, *148*(1), 1–13.
- Dao, T. T. H., Linthorst, H. J. M., & Verpoorte, R. (2011). Chalcone synthase and its functions in plant resistance. *Phytochemistry Reviews*, *10*(3), 397–412.
- Das, A., Laha, S., Mandal, S., Pal, S., & Siddiqui, M. W. (2018). *Chapter 14 - Preharvest Biofortification of Horticultural Crops* (M. W. B. T.-P. M. of P. F. and V. Q. Siddiqui (ed.); pp. 381–434). Academic Press.
- Delita, K., Handayani, E., & Hafid, H. (2022). Growth Response of Several Varieties of Tomato Plants (*Solanum lycopersicum* L.) Fed Goat Manure in Polybag. *Biological Sciences Research*, *20* (ITAPS 2021), 490–494.
- Du, M., Spalding, E. P., & Gray, W. M. (2020). Rapid Auxin-Mediated Cell Expansion. *Annual Review of Plant Biology*, *71*, 379–402.
- Edwards, R. L., Lyon, T., Litwin, S. E., Rabovsky, A., Symons, J. D., & Jalili, T. (2007). Quercetin reduces blood pressure in hypertensive subjects. *The Journal of Nutrition*, *137*(11), 2405–2411.
- Efferth, T. (2019). Biotechnology Applications of Plant Callus Cultures. *Engineering*, *5*(1), 50–59.
- Elateeq, A., Saad, Z., Eissa, M., & Ullah, S. (2021). Effect of chitosan and light conditions on the production of callus biomass, total flavonoids and total phenolics in *Ginkgo biloba* L. *Al-Azhar Journal of Agricultural Research*, *46*(1), 28–42.
- Fauzy, E., Mansyur, & Husni, A. (2016). Pengaruh Penggunaan Media Murashige Dan Skoog (MS) Dan Vitamin Terhadap Tekstur, Warna Dan Berat Kalus Rumput Gajah (*Pennisetum purpureum*) CV. Hawaii Pasca Radiasi Sinar Gamma Pada Dosis LD50 (In Vitro). *Jurnal Peternakan Universitas Padjajaran*, *2*(5), 1–22.

- García, E., Areche, C., Gómez-Aguirre, Y. A., Borquez, J., Muñoz, R., Cruz-Sosa, F., & Balch, E. P. M. (2021). Biomass production and secondary metabolite identification in callus cultures of *Coryphantha macromeris* (Engelm.) Britton & Rose (Cactaceae), a traditional medicinal plant. *South African Journal of Botany*, 137, 1–9.
- García, Y., & Gómez, E. (2013). Elicitors: A Tool for Improving Fruit Phenolic Content. *Agriculture*, 3(1), 33–52.
- Goy, R. C., Britto, D. De, & Assis, O. B. G. (2009). A Review of the Antimicrobial Activity of Chitosan. *Polímeros: Ciência e Tecnologia*, 19(3), 241–247.
- Hadrami, A., Adam, L. R., El Hadrami, I., & Daayf, F. (2010). Chitosan in plant protection. *Marine Drugs*, 8(4), 968–987.
- Hidangmayum, A., Dwivedi, P., Katiyar, D., & Hemantaranjan, A. (2019). Application of chitosan on plant responses with special reference to abiotic stress Application of chitosan on plant responses with special reference to abiotic stress. *Physiology and Molecular Biology of Plants*, 25(12), 313–326.
- Hidayah, V.N., P. Dewanti. 2023. Pengaruh kombinasi BAP (6-Benzylaminopurine) dan 2,4-D (Dichlorophenoxyacetic Acid) untuk Pembentukan Kalus Tebu (*Saccharum officinarum* L.) melalui metode Thin Cell Layer. *J. Agrotek Tropika*. 11(1): 89- 95.
- Hutami, S. (2008). Masalah Pencoklatan pada Kultur Jaringan. *Jurnal AgroBiogen*, 4(2), 83–88.
- Indah, P. N., & Ermavitalini, D. (2013). Induksi kalus daun nyamplung (*Calophyllum inophyllum* Linn.) pada beberapa kombinasi konsentrasi 6-Benzylaminopurine (BAP) dan 2,4-Dichlorophenpxyacetic Acid (2,4-D). *Jurnal Sains Dan Seni Pomits*, 2(1), 1–6.
- Isah, T., Umar, S., Mujib, A., Sharma, M. P., Rajasekharan, P. E., Zafar, N., & Fruk, A. (2018). Secondary metabolism of pharmaceuticals in the plant in vitro cultures: strategies, approaches, and limitations to achieving higher yield. *Plant Cell, Tissue and Organ Culture*, 132(2), 239–265.
- Isoda, H., Motojima, H., Onaga, S., Samet, I., Villareal, M. O., & Han, J. (2014). Analysis of the erythroid differentiation effect of flavonoid apigenin on K562 human chronic leukemia cells. *Chemico-Biological Interactions*, 220, 269–277.
- Jiao, J., Gai, Q.-Y., Wang, X., Qin, Q.-P., Wang, Z.-Y., Jing, L., & Yu, J.-F. (2018). Chitosan elicitation of *Isatis tinctoria* L. hairy root cultures for enhancing flavonoid productivity and gene expression and related antioxidant activity. *Industrial Crops & Products*, 124, 28–35.
- Julianti, R. F., Nurchayati, Y., & Setiari, N. (2021). Produksi Flavonoid Pada Kalus Tomat (*Lycopersicon esculentum* Mill.) Secara In Vitro Dalam Medium MS Dengan Konsentrasi Sukrosa Yang Berbeda. *Metamorfosa: Journal of Biological Sciences*, 8(1), 141.

- Kaviani, B. (2014). The effect of 2,4-D on callus induction of *Melia azedarach* L. *Thai Journal of Agricultural Science*, 47(2), 71–75.
- Kim, D. O., Seung Weon, J., & Chang Y, L. (2003). Antioxidant capacity of phenolic phytochemicals from various cultivars of plums. *Food Chemistry*, 81(3), 321–326.
- Kimura, S., & Sinha, N. (2008). Tomato (*Solanum lycopersicum*): A model fruit-bearing crop. *Cold Spring Harbor Protocols*, 3(11).
- Koes, R., Verweij, W., & Quattrocchio, F. (2005). Flavonoids: a colorful model for the regulation and evolution of biochemical pathways. *Trends in Plant Science*, 10(5), 236–242.
- Kranner, I., Minibayeva, F. V., Beckett, R. P., & Seal, C. E. (2010). What is stress? Concepts, definitions and applications in seed science. *New Phytologist*, 188(3), 655–673.
- Liu, C.-Z., & Saxena, P. K. (2009). *Saussurea medusa* Cell Suspension Cultures for Flavonoid Production BT - Protocols for In Vitro Cultures and Secondary Metabolite Analysis of Aromatic and Medicinal Plants (S. M. Jain & P. K. Saxena (eds.); pp. 53–59). Humana Press.
- Mallick, P. K. (2021). Medicinal Values of Tomato (*Lycopersicon esculentum* Mill . – Solanaceae). *International Journal of Applied Sciences And Biotechnol*, 9(3), 166–168.
- Mastuti, R., Batoro, J., & Waluyo, B. (2021). Pengaruh Elisitor Kitosan Terhadap Kandungan Withanolid Tunas In Vitro Aksesori Tanaman *Physalis angulata* Dari Pulau Madura. *Jurnal Tumbuhan Obat Indonesia*, 14(1), 1–14.
- Mastuti, R., Widoretno, W., & Harijati, N. (2020). Kultur Kalus Tanaman Obat Ciplukan (*Physalis angulata*). *Journal of Tropical Biology*, 8(1), 26–35.
- Mehbub, H., Shimasaki, K., & Mehraj, H. (2022). Low Concentration of Anti-Auxin and Anti-Fungal Agent Accelerates the PLB Regeneration of *Dendrobium okinawense* under Green LED. *Plants (Basel, Switzerland)*, 11(8).
- Mendhulkar, V., & Vakil, M. (2013). Chitosan and *Aspergillus niger* mediated elicitation of total flavonoids in suspension culture of *Andrographis paniculata* (BURM.F.) NEES. *International Journal of Pharma and Bio Sciences*, 4, B731–B740.
- Mendonça, E. G., Paiva, L. V., Stein, V. C., Pires, M. F., Santos, B. R., & Pereira, F. J. (2012). Growth curve and development of the internal calli structure of eucalyptus *camaldulensis* dehn. *Brazilian Archives of Biology and Technology*, 55(6), 887–896.
- Mir, K. A., Dhatt, A. S., Sandhu, J. S., & Sidhu, A. S. (2011). Effect of genotype, explant and culture medium on organogenesis in brinjal. *Indian Journal of Horticulture*, 68(3), 332–335.

- Moscatiello, R., Baldan, B., & Navazio, L. (2013). Plant cell suspension cultures. *Methods in Molecular Biology (Clifton, N.J.)*, 953, 77–93.
- Moye, Z., Burne, R., & Zeng, L. (2014). Uptake and Metabolism of N-Acetylglucosamine and Glucosamine by *Streptococcus mutans*. *Applied and Environmental Microbiology*, 80.
- Muliati, Nurhidayah, T., & Nurbiati. (2017). Pengaruh NAA, BAP Dan Kombinasinya Pada Media MS Terhadap Perkembangan Eksplan *Sansevieria macrophylla* Secara In Vitro. *Jurnal Fakultas Pertanian Universitas Riau*, 4(1), 1–13.
- Murthy, H. N., Lee, E.-J., & Paek, K.-Y. (2014). Production of secondary metabolites from cell and organ cultures: strategies and approaches for biomass improvement and metabolite accumulation. *Plant Cell, Tissue and Organ Culture (PCTOC)*, 118(1), 1–16.
- Noer, S., Pratiwi, R. D., Gresinta, E., Biologi, P., & Teknik, F. (2018). Penetapan Kadar Senyawa Fitokimia (Tanin, Saponin Dan Flavonoid Sebagai Kuersetin) Pada Ekstrak Daun Inggau (*Ruta angustifolia* L.). *Journal of Sciences and Data Analysis*, 18(1), 19–29.
- Nourozi, E., Hosseini, B., Hassani, A., Rostami, S., & Moghaddamfar, Z. (2014). A reliable and efficient protocol for inducing hairy roots in *Agastache foeniculum*. *Planta Medica*, 80(10).
- Patmala, D. (2023). Pengaruh Elisitor Nanokitosan Terhadap Pertumbuhan dan Kandungan Flavonoid dari Kultur Kalus Tomat (*Solanum lycopersicum* L.). *Skripsi*. Universitas Diponegoro.
- Pham, D., Hwang, H., Park, S., Cui, M., Lee, H., & Chun, C. (2019). Leaf chlorosis, epinasty, carbohydrate contents and growth of tomato show different responses to the red/blue wavelength ratio under continuous light. *Plant Physiology and Biochemistry : PPB*, 141, 477–486.
- Rahayu, S.-, & Suharyanto, S. (2020). Induksi Kalus Dengan 2,4D Dan BAP Pada Eksplan Daun Vegetatif Dan Generatif Tempuyung (*Sonchus arvensis* L.). *BioEksakta : Jurnal Ilmiah Biologi Unsoed*, 2(3), 479.
- Rahman, N. Hamidah., H. Fitriani, N. Rahman, N.S. Hartatik. 2021. Pengaruh beragam zat pengatur tumbuh terhadap induksi kalus organogenik dari ubi kayu (*Manihot esculenta* Crantz) genotipe gajah dan kuning. *Jurnal Ilmu Dasar* 22:119-126.
- Rasud, Y., & Bustaman. (2020). Induksi Kalus secara In Vitro dari Daun Cengkeh (*Syzigium aromaticum* L.) dalam Media dengan Berbagai Konsentrasi Auksin. *Jurnal Ilmu Pertanian Indonesia*, 25(1), 67–72.
- Rechenmann, C. P. (2010). Cellular responses to auxin: division versus expansion. *Cold Spring Harbor Perspectives in Biology*, 2(5), 1–15.

- Rivero, A. G., Keutgen, A. J., & Pawelzik, E. (2022). *Antioxidant Properties of Tomato Fruit (Lycopersicon esculentum Mill .) as Affected by Cultivar and Processing Method.*
- Setiawati, T., Ayalla, A., & Witri, A. (2019). Induksi Kalus Krisan (*Chrysanthemum morifolium* Ramat.) dengan Penambahan Berbagai Kombinasi Zat Pengatur Tumbuh (ZPT). *Jurnal EduMatSains*, 3(2), 119–132.
- Shen, N., Wang, T., Gan, Q., Liu, S., Wang, L., & Jin, B. (2022). Plant flavonoids: Classification, distribution, biosynthesis, and antioxidant activity. *Food Chemistry*, 383(August 2021), 132531.
- Silvina, F., Isnaini, I., & Ningsih, W. (2022). Induksi kalus daun binahong merah (*Basella rubra* L.) dengan pe,berian 2,4-D dan kinetin. *Jurnal Agro*, 8(2), 274–286.
- Sitiñjak, M. A., Isda, M. N., & Fatonah, S. (2015). Induksi Kalus Dari Eksplan Daun In Vitro Keladi Tikus (*Typhonium* sp.) Dengan Perlakuan 2,4-D Dan Kinetin. *Al Kaunyah Jurnal Biologi*, 8(1), 32–39.
- Slimestad, R., Fossen, T., & Verheul, M. J. (2008). The flavonoids of tomatoes. *Journal of Agricultural and Food Chemistry*, 56(7), 2436–2441.
- Taveira, M., Ferreres, F., Gil-Izquierdo, A., Oliveira, L., Valentão, P., & Andrade, P. B. (2012). Fast determination of bioactive compounds from *Lycopersicon esculentum* Mill. leaves. *Food Chemistry*, 135(2), 748–755.
- Teixeira-costa, B. E., & Andrade, C. (2021). Chitosan as a Valuable Biomolecule from Seafood Industry Waste in the Design of Green Food Packaging biomolecules Chitosan as a Valuable Biomolecule from Seafood Industry Waste in the Design of Green Food Packaging. *Biomolecules*, 11(1599).
- Teoh, E. S. (2016). Secondary Metabolites of Plants. *Medicinal Orchids of Asia*, 59–73.
- Ulva, M., Nurchayati, Y., Prihastanti, E., & Setiari, N. (2019). Pertumbuhan Kalus Tomat (*Lycopersicon esculentum* Mill.) Varietas Permata F1 dari Jenis Eksplan dan Konsentrasi Sukrosa yang Berbeda secara In Vitro. *Life Science*, 8(3), 160–169.
- Umami, N., Gondo, T., Ishigaki, G., Rahman, M. M., & Akashi, R. (2012). Efficient nursery production and multiple-shoot clumps formation from shoot tiller-derived shoot apices of dwarf napiergrass (*Pennisetum purpureum* Schumach.). *Journal WARAS*, 55(2), 121–127.
- Vallverdú, A., Medina-Remón, A., Casals-Ribes, I., Andres-Lacueva, C., Waterhouse, A. L., & Lamuela-Raventos, R. M. (2012). Effect of tomato industrial processing on phenolic profile and hydrophilic antioxidant capacity. *Lwt*, 47(1), 154–160.

- Wang, T., Li, Q., & Bi, K. (2018). Bioactive flavonoids in medicinal plants: Structure, activity and biological fate. *Asian Journal of Pharmaceutical Sciences*, 13(1), 12–23.
- Wang, Y., Chen, S., & Yu, O. (2011). Metabolic engineering of flavonoids in plants and microorganisms. *Applied Microbiology and Biotechnology*, 91(4), 949–956.
- Wicaksana, P. C., Wijaya, K. A., & Soeparjono, S. (2019). The Role Of Potassium And Calcium In Improving The Quality And Shelf Life Of Tomato (*Lycopersicon esculentum* var. servo). *Jurnal Biologi El-Hayah*, 7(2), 84–93.
- Xu, K., Chang, Y., Zhang, Y., Liu, K., Zhang, J., Wang, W., Li, Z., Wu, J., Ma, S., Xin, Y., Li, C., Zhou, Q., Qiu, H., Pi, Y., Wang, Y., Tan, G., & Li, C. (2016). *Rorippa indica* Regeneration via Somatic Embryogenesis Involving Frog Egg-like Bodies Efficiently Induced by the Synergy of Salt and Drought Stresses. *Scientific Reports*, 6, 19811.
- Xu, L. (2018). De novo root regeneration from leaf explants: wounding, auxin, and cell fate transition. *Current Opinion in Plant Biology*, 41, 39–45.
- Yelnititis, Y. (2012). PEMBENTUKAN KALUS REMAH DARI EKSPLAN DAUN RAMIN (*Gonystylus bancanus* (Miq) Kurz.). *Jurnal Pemuliaan Tanaman Hutan*, 6(3), 181–194.
- Zha, J., Wu, X., Gong, G., & Koffas, M. A. G. (2019). Pathway enzyme engineering for flavonoid production in recombinant microbes. *Metabolic Engineering Communications*.
- Zhang, D., Wang, H., Hu, Y., & Liu, Y. (2015). Chitosan Controls Postharvest Decay on Cherry Tomato Fruit Possibly via the Mitogen-Activated Protein Kinase Signaling Pathway. *Journal of Agricultural and Food Chemistry*, 63(33), 7399–7404.
- Zhang, L., Chin, D. P., & Mii, M. (2010). Agrobacterium-mediated transformation of protocorm-like bodies in *Cattleya*. *Plant Cell, Tissue and Organ Culture (PCTOC)*, 103(1), 41–47.
- Ziraluo, Y. P. B. (2021). Metode Perbanyak Tanaman Ubi Jalar Ungu (*Ipomea batatas* Poiret) dengan Teknik Kultur Jaringan atau Stek Planlet. *Jurnal Inovasi Penelitian*, 2(3), 1037–1046.
- Zou, Y., Lu, Y., & Wei, D. (2004). Antioxidant activity of a flavonoid-rich extract of *Hypericum perforatum* L. in vitro. *Journal of Agricultural and Food Chemistry*, 52(16), 5032–5039.