DAFTAR PUSTAKA

Ade, R., Rai, M.K. 2010. Review: Colchicine, Current Advances and Future Prospects. Nusantara Biosci. Vol. 2: 90-96.

Allum, J.F., Bringloe, D.H., Robers, A.V. 2007. Chromosome Doubling in a Rosa Rugosa Thub. Hybrid by Exposure of In Vitro Nodes to Oryzalin: The Effects of Node Lenght, Oryzalin Concentration and Exposure Time. Plant cell rep. Vol. 26 : 1977-1984.

Ari, E., Djapo, H., Mutlu, N., Gurbuz, E., Karaguzel, O. 2015. Creation of Variation Through Gamma Irradiation and Polyploidization in Vitex agnus-castus L. Sci. Hortic. Vol. 195:74-81.

Ari, I.D. 2018. Pertumbuhan dan Produksi 2 Varietas Melon (Cucumis melo L.) Pada Pemupukan Anorganik dan Organik Cair. [Skripsi]. Departemen Budidaya Pertanian, Fakultas Pertanian, Universitas Hasanuddin, Makassar.

Asif, M.J., Othman, R.Y. 2001. In Vitro Zygotic Embryo Culture of Wild Musa Acuminata Spp. Malaccensis and Factors Affecting Germination and Seedling Growth. Plant Cell Tissue Organ Cult. Vol. 67: 267–270.

Astuti, C.C. 2017. Analisis Korelasi Untuk Mengetahui Keeratan Hubungan Antara Keaktifan Mahasiswa Dengan Hasil Belajar Akhir. Journal of Information and Computer Technology Education. Vol. 1(1): 1-7.

Astuti, S.D., Andarwulan, N., Fardiaz, D., Purnomo, E.H. 2017. Karakterisasi Sifat Fisikokimia dan Fungsional Tepung Keladi Satoimo Hasil Fermentasi Terkendali dengan L. plantarum dan S. cerevisiae. Prosiding Seminar Nasional dan Call for Paper Pangan, Gizi dan kesehatan 796-809.

Badan Karantina Pertanian. 2019. Disukai Jepang Sulsel Ekspor Perdana Talas Beku. Balai Besar Karantina Pertanian, Kementerian Pertanian, Makassar. [Online]. http://makassar.karantina.pertanian.go.id/detailpost/disukai-jepang-sulsel-ekspor-perdana-talas-beku (Diakses Pada 09 April 2022)

Bernard, F., Moghbel, N., Hassannejad, S. 2012. Treatment of Licorice Seeds With Colchicine: Changes in Seedling DNA Levels and Anthocyanin and Glycyrrhizic Acid Contents Of Derived Callus Cultures. Nat Prod Commun. Vol. 7: 1457-1460.

Blasco, M., Badenes, M.L., Del M.N.M. 2015. Colchicineinduced Polyploidy in Loquat (Eriobotrya japonica (Thunb.) Lindl.). Plant Cell Tissue Organ Cult. Vol. 120: 453-461.

Chair, H., Traore, R.E., Duval, M.F., Rivallan, R., Mukherjee, A., Aboagye, L.M., Rensburg, W.J., Andrianavalona, V., Carvalho, P., Saborio, F., Prana, M.S., Komolong, B., Lawac, F., Lebot, V. 2016. Genetic Diversification and Dispersal of Taro (Colocasia esculenta (L.) Schott). PLoS ONE Vol. 11(6).

Cimen, B. 2020. Induction of Polyploidy in C35 Citrange Through In Vitro Colchicine Treatments of Seed-Derived Explants. International Journal of Fruit Science Vol. 20(3): 1929-1941.

Damayanti, F.I., Mariska, I. 2003. Induksi Poliploidi dengan Kolkisin Pada Hibrid F1 Hasil Persilangan Antar Spesies Pada Tanaman Panili Asal Ciamis. Berita Biologi Vol. 6(4): 589-594.

De, K.K., Saha, A., Tamang, R., Sharma, B. 2010. Investigation on relative genome sizes and ploidy levels of Darjeeling-Himalayan Rhododendron species using flow cytometer. Indian J. Biotechnol. Vol. 9: 64-68.

De, S.S., Leus, L., Eeckhaut, T., Van, B.E., Debergh, P., De, L.M. 2004. Somatic Polyploid Petals: Regeneration Offers New Roads for Breeding Belgian Pot Azaleas. Plant Cell Tissue Organ Cult. Vol. 76: 183-188.

Demtsu B, Taychasinpitak T, Wongchaochant S, Manochai B. 2013. Induced Mutation by Colchicine Treatment of Somatic Embryos in 'Namwa' Banana (Musa sp. ABB). International Transaction Journal of Engineering, Management, and Applied Sciences and Technologies Vol. 4(4):311-320

Dewi, I.A.R.P., Pharmawati, M. 2018. Penggandaan Kromosom Marigold (Tagetes erecta L.) dengan Perlakuan Kolkisin. A Scientific Journal Vol. 35(3): 153-157.

Dwiyani, R. 2015. Kultur Jaringan Tanaman. Bali: Penerbit Pelawa Sari.

Eeckhaut, T. Leus, L. Van Huylenbroeck, J. 2005. Exploitation of Flow Cytometry for Plant Breeding. Acta Physiologiae Plantarum Vol. 27: 743-750.

Ekowati, G., Yanuwiadi, B. dan Azrianingsih, R. 2015. Sumber Glukomanan Dari Edible Araceae Di Jawa Timur. J-PAL. Vol. 6(1)**:** 32-41.

El-Nashar, Y.I., Ammar, M.H. 2015. Mutagenic Influences of Colchicine on Phenological and Molecular Diversity of Calendula officinalis L. Genet. Mol. Biol. Vol. 15: 1–15.

Esfahani, S.T., Karimzadeh, G., Naghavi, M.R. 2020. In Vitro Polyploidy Induction in Persian Poppy (Papaver bracteatum Lindl.). International Journal of Cytology, Cytosystematics and Cytogenetics Vol. 73(1): 133-144.

Ezeabara, C.A., Okeke, C., Amadi J. 2015. Phytochemical, Proximate, Mineral and Vitamin Investigations of Cormels of Five Varieties of Colocasia esculenta (L.) Schott Found in Anambra State, Southeastern Nigeria. American Journal of Life Science Researches Vol. 3(4): 273-281.

Ganga, M., N. Chezhiyan. 2002. Influence of the Antimitotic Agents Colchicine and Oryzalin on In Vitro Regeneration and Chromosome Doubling of Diploid Bananas (Musa spp.). J. Hortic. Sci. Biotechnol. Vol. 77(5): 572-575.

Hamill, S.D., Smith, M.K., Dodd, W.A. 1992. In Vitro Induction of Banana Autotetraploids by Colchicines Treatment of Micropropagated Diploids. Aust. J. Bot. Vol. 40: 887–896

Heo, J.Y., Jeong, S.H., Choi, H.R., Park, S.M. 2016. Polyploidy Production in Lilium leichtlinii var. maximowiczii using Colchicine. Anim. Plant Sci. Vol. 26: 1111-1116.

Indonesian Trade Promotion Center (ITPC Osaka). 2020. Market Brief ITPC Osaka: Umbi-Umbian HS 0714. Laporan Informasi Intelijen Bisnis 2020. [Online]. https://itpc.or.jp/wp-content/uploads/2020/12/Market-Brief-Umbi-Umbian-HS-0704-Final.pdf (Diakses Pada 09 April 2022)

Jala, A. 2014. Colchicine and Duration Time on Survival Rate and Micropropagation of Dionaea muscipula Ellis. African Journal of Plant Science Vol. 8(6): 291-297.

Jameela, H., Sugiharto, A.N., Soegianto, A. 2014. Keragaman Genetik Dan Heritabilitas Karakter Komponen Hasil Pada Populasi F2 Buncis (Phaseolus vulgaris L.) Hasil Persilangan Varietas Introduksi Dengan Varietas Lokal. Jurnal Produksi Tanaman Vol. 2 (4): 324-329

Javadia, N., Karimzadeh, G., Sharifi, M., Moieni, A., Behmanesh, M. 2017. In Vitro Polyploidy Induction: Changes in Morphology, Podophyllotoxin Biosynthesis, and Expression of the Related Genes in Linum album (Linaceae). Planta. Vol. 245 :1165-1178.

Jones, J.R., Ranney, G.T., Eaker, T.A. 2008. A Novel Method for Inducing Polyploidy in Rhododendron seedlings.J. Am. Rhododendron Soc. Vol. 62: 130-135.

Kainth, D., Grosser, J.W. 2010. Induction of Autotetraploid in Pumelo (Citrus grandis L. Osbeck) Through Colchicine Treatment of Meristematically Active Seeds In Vitro. Proceedings on Florida State Horticultural Society Vol. 123:44-48.

Kallo, R., Satna, A., Nappu, M.B. 2019. Prospek Pengembangan Talas Jepang Satoimo di Sulawesi Selatan. Buletin Diseminasi Teknologi Pertanian Vol. 1(1): 1-5.

Kementerian Perdagangan Republik Indonesia. 2013. Market Brief: Ubi Kayu, Ubi Jalar dan Talas. Atase Perdagangan KBRI-Tokyo.

Kharde, A.V., Chavan, N.S., Chandre, M.A., Autade, R.H., Khetmalas, M.B. 2017. In Vitro Enhancement of Bacoside in Brahmi (Bacopa monnieri) Using Colchicine. Journal Plant Biochemistry and Physiology Vol. 5 (1): 1-6.

Kim, Ki Hyun, Eunjung, Moon, Sun Yeo, Kim, Kang, Ro Lee. 2010. Antimelnogenic Fatty Acid Derivates from the Tuber-Barks of Colocasia antiquarum var esculenta. Bull. Korean Chem. Soc. Vol. 31(7).

Koswara, S. 2013. Teknologi Pengolahan Umbi-Umbian Bagian 1: Pengolahan Umbi Talas. Seafast Center. Research and Community Service Institution. Bogor Agricultural University. Bogor. 8-10. seafast.ipb.ac.id/tpcproject/wp-content/uploads/2013/10/1-pengolahan-talas.pdf. [Diakses Pada 06 September 2021].

Koutoulis, A., Roy, A.T., Price, A., Sheriff, L., Legget, G. 2005. DNA Ploidy Level of Colchicines-Treated Hops (Humulus lupulus L.). Sci. Hortic. Vol. 105: 263-268.

Kurtz, L.E., Brand, M.H., Lubell-Brand, J.D. 2020. Production of Tetraploid and Triploid Hemp. HortScience Vol. 55(10): 1703-1707.

Madon, M., Clyde, M.M., Hashim, H., Mohd yusuf, Y., Mat, H., Saratha, S. 2005. Polyploidy Induction of Oil Palm Through Colchicine and Oryzalin Treatments. Journal of Oil Palm Research Vol. 17: 110- 123.

Mahyuni, R., Eva, S.B.G., Diana, S.H. 2015. Pengaruh Pemberian Kolkisin Terhadap Morfologi dan Jumlah Kromosom Tanaman Binahong (Andredera cordifolia (Ten) Steenis). Jurnal Agroteknologi Vol. 4(1): 1815-1821

Manzoor, A., Ahmad, T., Bashir, M.A., Baig, M.M.Q., Quresh, A.A., Shah, M.K.N., Hafiz, I.A. 2018. Induction and Identification of Colchicine

Induced Polyploidy in Gladiolus grandiflorus 'White Prosperity'. Journal Folia Horticulturae Vol. 30(2): 307-319.

Maretta, D., Dwi, .P., H., Henti, R., Amelia, T., 2016, Multiplikasi Tunas dan Induksi Umbi Mikro Satoimo (Colocasia Esculenta (L.)Schott) Pada Beberapa Konsentrasi Sukrosa dan Benzilaminopurin. Jurnal Bioteknologi dan Biosains Indonesia Vol. 3(2): 81-88.

Mensah, J.K., Obadoni, B.O., Akomeah, P.A., Ikhajiagbe, B., Ajibolu, J. 2007. The Effects of Sodium Azide and Colchicine Treatments on Morphological and Yield Traits of Sesame Seed (Sesame indicum L.). African Journal of Biotechnology Vol. 6: 534-538.

Mergedus, A., Kristl, J., Ivancic, A., Sober, A., Sustar, V., Krizan, T., Lebot, V. 2015. Variation of Mineral Composition in Different Parts of Taro (Colocasia esculenta) Corms. Food Chemistry Vol. 170: 37-46.

Nagano, M., Sunaryo, Nur, E.S. 2016. Studi Tentang Aplikasi Kompos UB Pada Pertumbuhan dan Hasil Tanaman Talas (Colocasia esculenta (L.) Schott var. Antiquorum) yang Ditanam di Lahan Kering Pada Musim Kemarau. Jurnal Produksi Tanaman Vol. 4(7): 570-577.

Omidbaigi, R., Mirzaee, M., Hassani, M.E., Moghadam, M.S. 2010. Induction and Identification of Polyploidy in Basil (Ocimum basilicum L.) Medicinal Plant by Colchicine Treatment. International Journal of Plant Production Vol. 4: 97-98.

Pharmawati, M., Wistiani, N.L.A.J. 2015. Induksi Mutasi Kromosom dengan Kolkisin Pada Bawang Putih (Allium sativum L.) Kultivar 'Kesuna Bali'. Jurnal Biologos Vol. 5(1).

Pirkoohi, M.H., Keyvanloo, M., Hassanpur, M. 2011. Colchicine Induced Polyploidy in Mint by Seed Treatment. Int. J. Agric. Crop Sci. Vol. 3:102-104.

Prajapati, R. 2011. Colocasia esculenta: A Potent Indigenous Plant. International Journal of Nutrition, Pharmacology, Neurological Diseases Vol. 2(1): 90-96.

Purwaningsih, H., Astuti, U.P. 2018. Superiority of Japanese Taro (Satoimo) (Colocasia Esculenta Var Antiquorum) As Germplasm Indonesia. Agrotechnology Vol.7.

Qalby N, Sjahril R, Dachlan A, Sakae A. 2020. Colchicine induced polyploidy in Common Ice plant Mesembryanthemum crystallinum L. IOP Conference Series: Earth and Environmental Science Vol. 486.

Rahmi, P., Witjaksono, Ratnadewi, D. 2019. Induksi Poliploidi Tanaman Kangkung (Ipomoea aquatica Forssk.) Kultivar Salina In Vitro dengan Oryzalin. Jurnal Biologi Indonesia Vol. 15(1):1-8.

Rashmi, D.R., Raghu, N., Gopenath, T.S., Palanisamy, P., Bakthavatchalam, P., Karthikeyan, M., Gnanasekaran, A., Ranjith, M.S., Chandrashekrappa G.K., Basalingappa, K.M. 2018. Taro (Colocasia esculenta): An Overview. Journal of Medicinal Plants Studies Vol. 6(4): 156-161.

Rohaeni, W.R., Permadi, D.A.N.K. 2012. Analisis Sidik Lintas Beberapa Karakter Komponen Hasil Terhadap Daya Hasil Padi Sawah Pada Aplikasi Agrisimba. Agrotrop: Journal on Agriculture Science Vol. 2(2): 185-190.

Rosnadelly, C.N.R., Agussabti, Azhar. 2018. Prospek Pengembangan Talas Jepang (Colocasia esculenta Var Antiquorum) di Balai Diklat Pertanian (BDP) Saree, Aceh Besar. Jurnal Ilmiah Mahasiswa Pertanian Unsyiah Vol. 3(1).

Ruiz, M., Oustric, J., Santini, J., Morillon, R. 2020. Synthetic Polyploid in Grafted Crops. Frontiers in Plant Science Vol. 11: 1-19.

Sadhukhan R., Ganguly A., Singh P.K., Sarkar H.K. 2014. Study of Induced polyploidy in African marigold (Tagetes ecrecta L.) Environ. Ecol. Vol. 32: 1219–1222.

Sajjad, Y., Jaskani, M.J., Mehmood, A., Ahmad, I., Abbas, H. 2013. Effect of Colchicine on In Vitro Polyploidy Induction in African Marigold (Tagetes erecta). Pak. J. Bot. Vol. 45:1255-1258.

Sakhanokho, H.F., Rowena, V.K., Islam-Faridi, N. 2009. Induced Polyploidy in Diploid Ornamental Ginger (Hedychium muluense R. M. Smith) Using Colchicine and Oryzalin. Journal of Hortscience Vol. 44: 1809-1814.

Sattler, M.C., Carvalho, C.R., Clarindo, W.R. 2016. The Polyploidy and its Key Role in Plant Breeding. Planta. Vol. 243: 281-296.

SEAMEO. 2013. Talas Jepang (Satoimo) Tissue Culture-Service. Laboratory SEAMEO BIOTROP: Bogor. [Online]. http://sl.biotrop.org/index.php?option=com_contentandview=articleandid=121:talas-jepang-satoimoandcatid=60:produk-kuljarandItemid=108. (Diakses Pada 06 September 2021).

Shahriari-Ahmadi, F., Dehghan, E., Farsi, M., Azizi, M. 2008. Tetraploid Induction of Hyoscyamus muticus L. using Colchicine Treatment. Pakistan Journal of Biologi Science Vol. 11(24): 2653-2659.

Sharma, Bhumika, A., Sharma. 2012. Future Prospect of Nanotechnology in Development of Anti-Aging Formulations. International Journal of Farmaceutical Science Vol. 4.

Sirojuddin, Rahayu, T., Laili, S. 2017. Pengaruh Pemberian Berbagai Konsentrasi Kolkisin dan Lama Perendaman terhadap Respon Fenotipik Zaitun (Olea europaea). Bioscience Tropic Vol. 2(2): 2338-2805.

Sudirman, Amier, N., Amal, M.A.I. 2021. Review: Induksi Keragaman Berbasis Bioteknologi Pada Tanaman Anggrek (Orchids Sp.). J. Agrivigor. Vol. 12(2): 75–82.

Suminarti, N. E. 2011. Teknik Budidaya Tanaman Talas (Colocasia esculenta (L.) Schoot var Antiquorum) Pada Kondisi Kering dan Basah. [Disertasi]. Program Studi Ilmu Pertanian, Minat Agronomi, Program Pasca Sarjana Universitas Brawijaya. Malang.

Suryo. 2007. Sitogenetika. Yogyakarta: Gadjah Mada University Press.

Telaumbanua dan Karsa, E.S. 2005. Pemanfaatan Tepung Umbi Talas (Colocasia esculenta L.) dan Solid Dekanter dalam Ransum Terhadap Performans Itik Peking Umur 1 hari – 84 Hari. [Skripsi]. Departemen Peternakan Fakultas Pertanian, Universitas Sumatera Utara.

Temesgen, M., Retta, N. 2015. Nutritional Potential, Health and Food Security Benefits of Taro Colocasia esculenta (L.): A Review. Food Science and Quality Management Vol. 36: 23-30.

Tesfaye, M. 2005. Agronomic and Yield Performance of Induced-Autotetraploid Ensete (Ensete ventricosum) Clones. Plant Genet. Resour. Newsl. Vol. 143: 56–58.

Thao NTP, Ureshino K, Miyajima I, Ozaki Y, Okubo H. 2003. Induction of Tetraploids in Ornamental Alocasia Through Colchicine and Oryzalin Treatments. Plant Cell, Tissue and Organ Culture Vol. 72: 19-25.

Tilaar, Rantung, W.J., Tulung, S. 2015. Induksi Tunas dari Nodul Krisan Kulo dalam Media Murashige dan Skoog yang Diberi Sitokinin. Eugenia. Vol. 21(2).

Urwin N.A. 2014. Generation and Characterization of Colchicine-Induced Polyploid Lavandula x intermedia. Euphytica. Vol. 197: 331–339.

Wahyuni, Y.I. 2019. Strategi Pengembangan Satoimo di Desa Bonto Daeng Kecamatan Uluere Kabupaten Bantaeng. [Skripsi]. Program Studi Agribisnis, Fakultas Pertanian, Universitas Muhammadiyah Makassar.

Wang, X., Cheng, Z.M., Zhi, S., Xu, F. 2016. Breeding Triploid Plants: A Review. Czech J. Genet. Plant Breed. Vol. 52: 41-54.

Wulandari, D.R., Ermayanti, T.M., Purwito, A., Susanto, S., Husni, A. 2015. In Vitro Induction of Tetraploid Pummelo 'Nambangan' (Citrus maxima (Burm.) Merr.) by Colchicine Treatment Using Germinated Seed, Shoot Tip and Cotyledonary Node as Eplants. Annales Bogorienses Vol. 19(1):5-7.

Wulansari, A., Marthin, A.F., Ermayanti, T.M. 2016. Induksi Tanaman Poliploid Talas (Colocasia esculenta L.) dengan Perlakuan Orizalin secara In Vtro. Jurnal Biologi Indonesia Vol. 12(2): 297-305.

Xu, C.G., Tang, T.X., Chen, R., Liang, C.H., Liu, X.Y., Wu, C.L., Yang, Y.S., Yang, D.P., Wu, H. 2014. A Comparative Study Of Bioactive Secondary Metabolite Production in Diploid and Tetraploid Echinacea purpurea (L.) Moench. Plant Cell Tissue Organ Cult. Vol. 116: 323-332.

Yulian, Turmudi, E., Hindarto, K.S., Bustamam, H., Hutajulu, J.N. 2016. Pertumbuhan Vegetatif Talas Satoimo dan Kultivar Lokal pada Dosis Pupuk Nitrogen yang Berbeda. Akta Agrosia, Vol. 19(2).

Yuwono T. 2006. Bioteknologi Pertanian. Yogyakarta: Gadjah Mada University Press.

Zhang, Z., Dai, H., Xiao, M., Liu, X. 2008. In Vitro Induction of Tetraploids in Phlox subulata L. Euphytica. Vol. 159: 59-65.

Zulkarnain. 2009. Kultur Jaringan Tanaman. Jambi: PT Bumi Aksara.

LAMPIRAN

Tabel Lampiran 1. Komposisi Larutan Media *Murashige and Skoog* (MS)

Larutan stok	Bahan kimia	Konsentrasi Senyawa akhir Mg/L	Vol. Larutan Stok/ Liter Media (mL/l)
A	NH_4NO_3	1650	20
B	KNO_3	1900	20
C	KH_2PO_4	170	20
	H_3BO_3	6.2	
	KI	0.83	
	$Na_2MoO_4.2HO$	0.25	
	$CoCl_2.H_2O$	0.025	
D	$CaCl_2.H_2O$	440	20
E	$MgSO_4.7H_20$	370	20
	$MnSO_4.H_2O$	16.9	
	$ZnSO_4.5H_2O$	8.6	
	$CuSO_4.5H_2O$	0.025	
F	$FeSO_4.7H_2O$	27.85	20
	Na_2EDTA	37.3	
G	Thiamine	0.1	10
	Pyridoxine	0.5	
	Nicotinic Acid	0.5	
	Glycine	2	
H	Inositol	100	20

Sumber: Zulkarnain, 2009

Tabel Lampiran 2a. Data Pengamatan Jumlah Daun Hidup Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

Perlakuan		Minggu ke-					
		2	4	8	10	14	16
c0t1	I	2	3	3	4	8	19
	II	1	2	2	3	7	18
	III	1	2	2	5	10	19
c1t1	I	1	2	2	2	3	6
	II	2	3	2	2	1	4
	III	2	3	1	3	7	7
c2t1	I	1	3	1	3	8	7
	II	0	2	0	2	2	2
	III	1	2	1	1	2	3
c3t1	I	1	1	1	1	1	2
	II	1	2	0	3	1	1
	III	1	2	1	3	3	3
c0t2	I	2	3	3	8	16	23
	II	1	2	2	6	21	24
	III	1	2	2	5	19	22
c1t2	I	1	2	1	2	12	9
	II	1	2	2	1	4	6
	III	0	1	1	2	4	5
c2t2	I	1	2	2	2	5	16
	II	1	2	2	6	22	24
	III	1	2	0	1	15	21
c3t2	I	1	1	1	1	10	7
	II	1	1	0	1	2	5
	III	1	1	0	1	2	4

Tabel Lampiran 2b. Jumlah Daun Hidup Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* Umur 16 MST

Kombinasi Perlakuan	Ulangan			Total	Rata-Rata
	I	II	III		
c0t1	19.00	18.00	19.00	56.00	18.67
c1t1	6.00	4.00	7.00	17.00	5.67
c2t1	7.00	2.00	3.00	12.00	4.00
c3t1	2.00	1.00	3.00	6.00	2.00
c0t2	23.00	24.00	22.00	69.00	23.00
c1t2	9.00	6.00	5.00	20.00	6.67
c2t2	16.00	24.00	21.00	61.00	20.33
c3t2	7.00	5.00	4.00	16.00	5.33
Total	89.00	84.00	84.00	257.00	10.71

Tabel Lampiran 2c. Sidik Ragam Jumlah Daun Hidup Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* Umur 16 MST

SK	Db	JK	WT	F.Hit	F.Tab	
					0.05	0.01
T	1	234.375	234.37500	54.09**	4.49	8.53
C	3	1049.125	349.70833	80.70**	3.24	5.29
TxC	3	212.125	70.70833	16.32**	3.24	5.29
Galat	16	69.333	4.33333			
Total	23	1564.95833				

KK: 19.44%

Keterangan : ** = Berpengaruh Sangat Nyata

Tabel Lampiran 3a. Data Pengamatan Jumlah Akar Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

Perlakuan		Minggu ke-					
		2	4	8	10	14	16
	I	1	1	1	1	5	6
c0t1	II	0	0	1	1	4	4
	III	2	2	2	2	5	5
	I	0	0	0	1	1	2
c1t1	II	0	1	1	1	1	3
	III	0	1	1	1	2	2
	I	0	0	1	1	2	2
c2t1	II	0	0	1	1	1	1
	III	0	1	1	1	2	2
	I	0	0	1	1	1	1
c3t1	II	0	0	0	1	1	1
	III	0	0	1	1	1	1
	I	2	2	3	3	6	13
c0t2	II	2	2	2	2	5	14
	III	0	2	2	2	5	12
	I	0	1	1	1	3	3
c1t2	II	0	1	1	1	1	2
	III	0	0	0	1	1	2
	I	0	0	1	1	2	3
c2t2	II	0	0	1	1	4	5
	III	0	0	1	1	2	4
	I	0	0	1	1	3	3
c3t2	II	0	0	0	1	1	3
	III	0	0	0	1	2	2

Tabel Lampiran 3b. Jumlah Akar Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* Umur 16 MST

Kombinasi Perlakuan	Ulangan			Total	Rata-Rata
	I	II	III		
c0t1	6.00	4.00	5.00	15.00	5.00
c1t1	2.00	3.00	2.00	7.00	2.33
c2t1	2.00	1.00	2.00	5.00	1.67
c3t1	1.00	1.00	1.00	3.00	1.00
c0t2	13.00	14.00	12.00	39.00	13.00
c1t2	3.00	2.00	2.00	7.00	2.33
c2t2	3.00	5.00	4.00	12.00	4.00
c3t2	3.00	3.00	2.00	8.00	2.67
Total	33.00	33.00	30.00	96.00	4.00

Tabel Lampiran 3c. Sidik Ragam Jumlah Akar Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* Umur 16 MST

SK	Db	JK	WT	F.Hit	F.Tab	
					0.05	0.01
T	1	54.00000	54.00000	99.69**	4.49	8.53
C	3	203.00000	67.66667	124.92**	3.24	5.29
TxC	3	54.33333	18.11111	33.44**	3.24	5.29
Galat	16	8.66667	0.54167			
Total	23	320.00000				

KK: 18.40%

Keterangan : ** = Berpengaruh Sangat Nyata

Tabel Lampiran 4a. Data Pengamatan Jumlah Tunas Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

Perlakuan		Minggu ke-					
		2	4	8	10	14	16
c0t1	I	0	4	8	11	27	31
	II	0	1	11	16	24	28
	III	3	5	9	12	21	30
c1t1	I	0	1	2	5	11	14
	II	0	0	1	2	8	11
	III	0	0	3	7	12	17
c2t1	I	0	1	3	6	14	21
	II	0	0	2	6	17	25
	III	0	0	2	3	7	12
c3t1	I	0	0	2	2	4	5
	II	0	0	4	5	5	5
	III	0	0	3	4	8	7
c0t2	I	0	3	13	18	26	31
	II	1	2	11	23	28	33
	III	0	1	9	11	23	32
c1t2	I	0	0	3	4	11	12
	II	0	0	2	3	6	8
	III	0	0	2	2	4	7
c2t2	I	0	0	1	3	8	13
	II	0	0	3	10	15	20
	III	0	1	4	6	12	16
c3t2	I	0	0	5	14	19	23
	II	0	0	4	7	15	16
	III	0	0	1	2	10	14

Tabel Lampiran 4b. Jumlah Tunas Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* Umur 16 MST

Kombinasi Perlakuan	Ulangan			Total	Rata-Rata
	I	II	III		
c0t1	31.00	28.00	30.00	89.00	29.67
c1t1	14.00	11.00	17.00	42.00	14.00
c2t1	21.00	25.00	12.00	58.00	19.33
c3t1	5.00	5.00	7.00	17.00	5.67
c0t2	31.00	33.00	32.00	96.00	32.00
c1t2	12.00	8.00	7.00	27.00	9.00
c2t2	13.00	20.00	16.00	49.00	16.33
c3t2	23.00	16.00	14.00	53.00	17.67
Total	150.00	146.00	135.00	431.00	17.96

Tabel Lampiran 4c. Sidik Ragam Jumlah Akar Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* Umur 16 MST

SK	Db	JK	WT	F.Hit	F.Tab	
					0.05	0.01
T	1	15.04167	15.04167	1.21^{tn}	4.49	8.53
C	3	1482.45833	494.15278	39.66**	3.24	5.29
TxC	3	260.12500	86.70833	6.96**	3.24	5.29
Galat	16	199.33333	12.45833			
Total	23	1956.95833				

KK: 19.65%

Keterangan : ** = Berpengaruh Sangat Nyata
tn = Berpengaruh Tidak Nyata

Tabel Lampiran 5a. Waktu Bertunas Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

Kombinasi Perlakuan	Ulangan			Total	Rata-Rata
	I	II	III		
c0t1	20.00	23.00	15.00	58.00	19.33
c1t1	30.00	31.00	37.00	98.00	32.67
c2t1	20.00	44.00	38.00	102.00	34.00
c3t1	46.00	46.00	39.00	131.00	43.67
c0t2	18.00	21.00	22.00	61.00	20.33
c1t2	41.00	33.00	32.00	106.00	35.33
c2t2	47.00	41.00	26.00	114.00	38.00
c3t2	42.00	42.00	43.00	127.00	42.33
Total	264.00	281.00	252.00	797.00	33.21

Tabel Lampiran 5b. Sidik Ragam Waktu Bertunas Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

SK	Db	JK	WT	F.Hit	F.Tab	
					0.05	0.01
T	1	15.04167	15.04167	0.34^{tn}	4.49	8.53
C	3	1699.12500	566.37500	12.98**	3.24	5.29
TxC	3	23.79167	7.93056	0.18^{tn}	3.24	5.29
Galat	16	698.00000	43.62500			
Total	23	2435.95833				

KK: 19.89%

Keterangan : ** = Berpengaruh Sangat Nyata
tn = Berpengaruh Tidak Nyata

Tabel Lampiran 6a. Waktu Berakar Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

Kombinasi Perlakuan	Ulangan			Total	Rata-Rata
	I	II	III		
c0t1	15.00	30.00	16.00	61.00	20.33
c1t1	44.00	34.00	32.00	110.00	36.67
c2t1	40.00	45.00	39.00	124.00	41.33
c3t1	49.00	54.00	44.00	147.00	49.00
c0t2	7.00	13.00	17.00	37.00	12.33
c1t2	30.00	36.00	50.00	116.00	38.67
c2t2	55.00	33.00	53.00	141.00	47.00
c3t2	54.00	59.00	65.00	178.00	59.33
Total	294.00	304.00	316.00	914.00	38.08

Tabel Lampiran 6b. Sidik Ragam Waktu Berakar Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

SK	Db	JK	WT	F.Hit	F.Tab	
					0.05	0.01
T	1	37.50000	37.50000	0.66^{tn}	4.49	8.53
C	3	4613.50000	1537.83333	26.98**	3.24	5.29
TxC	3	272.83333	90.94444	1.60^{tn}	3.24	5.29
Galat	16	912.00000	57.00000			
Total	23	5835.83333				

KK: 19.82%

Keterangan : ** = Berpengaruh Sangat Nyata
tn = Berpengaruh Tidak Nyata

Tabel Lampiran 7a. Waktu Membentuk Planlet Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

Kombinasi Perlakuan	Ulangan			Total	Rata-Rata
	I	II	III		
c0t1	20.00	30.00	16.00	66.00	22.00
c1t1	44.00	34.00	37.00	115.00	38.33
c2t1	40.00	45.00	39.00	124.00	41.33
c3t1	49.00	54.00	44.00	147.00	49.00
c0t2	18.00	21.00	22.00	61.00	20.33
c1t2	41.00	36.00	50.00	127.00	42.33
c2t2	55.00	41.00	53.00	149.00	49.67
c3t2	54.00	59.00	65.00	178.00	59.33
Total	321.00	320.00	326.00	967.00	40.29

Tabel Lampiran 7b. Sidik Ragam Waktu Membentuk Planlet Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

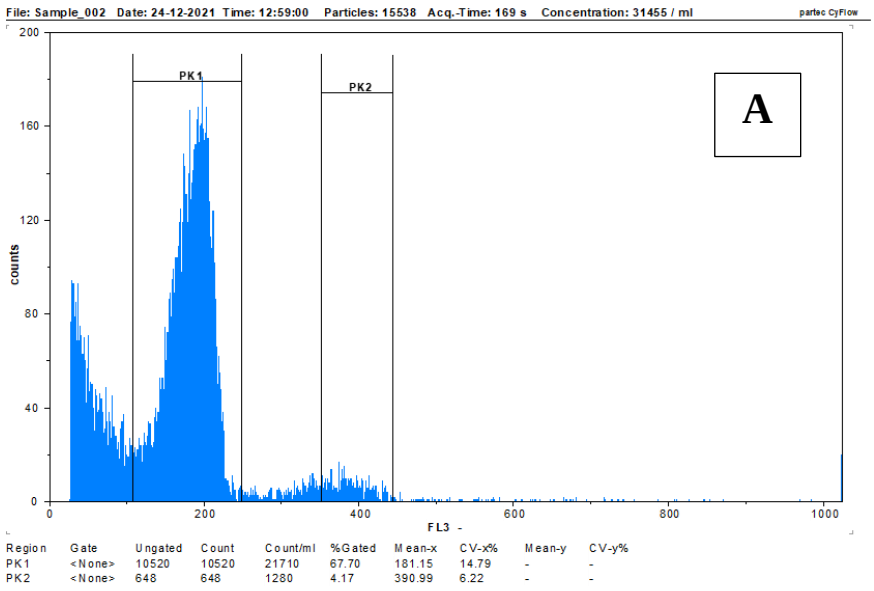
SK	Db	JK	WT	F.Hit	F.Tab	
					0.05	0.01
T	1	165.37500	165.37500	5.17*	4.49	8.53
C	3	3512.45833	1170.81944	36.59**	3.24	5.29
TxC	3	127.12500	42.37500	1.32^{tn}	3.24	5.29
Galat	16	512.00000	32.00000			
Total	23	4316.95833				

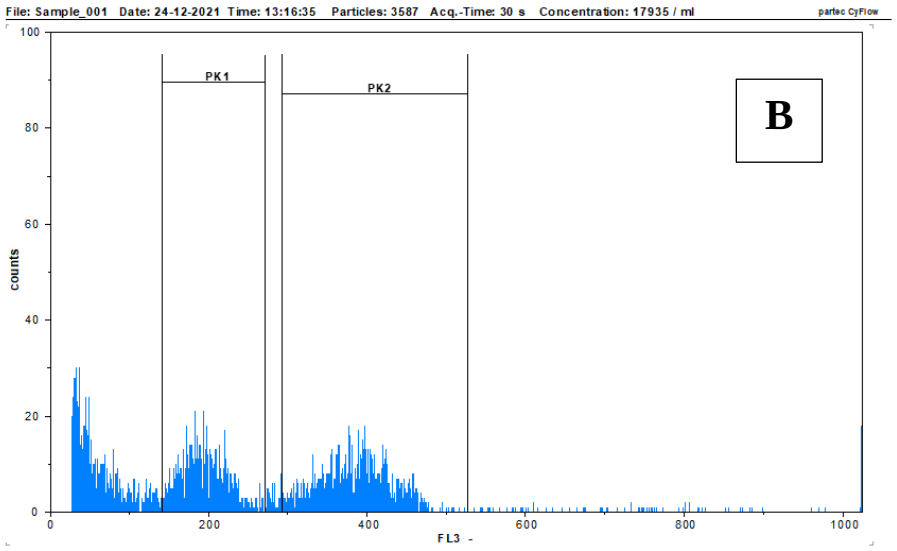
KK: 14.04%

Keterangan : ** = Berpengaruh Sangat Nyata
* = Berpengaruh Nyata
tn = Berpengaruh Tidak Nyata

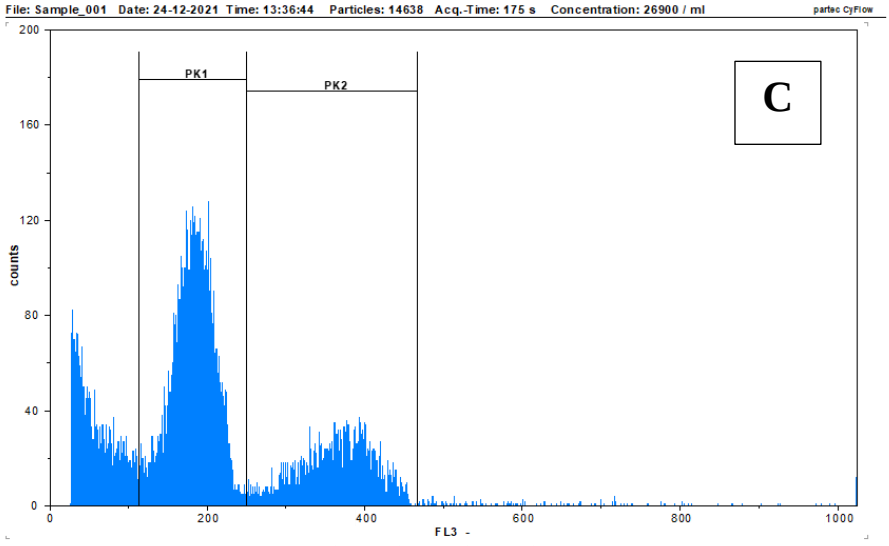
Tabel Lampiran 8. Data Hasil Analsis *Flow Cytometry* Tanaman Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*

Perlakuan		Count	Count/mL	% Gated	Mean	% CV
Kontrol (c0t1, c0t2)	PK1	10520	21710	67.70	181.15	14.79
	PK2	648	1280	4.17	390.99	6.22
c1t1	PK1	1017	5085	28.35	196.06	14.79
	PK2	1326	6630	36.97	386.19	11.70
c2t1	PK1	7749	14300	52.94	182.12	14.67
	PK2	3658	6935	24.99	363.62	12.87
c3t1	PK1	4305	9360	55.26	172.52	18.20
	PK2	1266	2800	16.25	360.05	13.01
c1t2	PK1	1593	2525	20.27	181.22	15.65
	PK2	4252	6890	54.10	363.76	13.93
c2t2	PK1	4136	7465	29.94	164.12	13.02
	PK2	2126	4195	15.39	210.09	5.51
	PK3	4856	9085	35.15	359.90	13.83
c3t2	PK1	4262	11765	28.24	187.26	14.71
	PK2	6695	18670	44.36	374.60	12.57

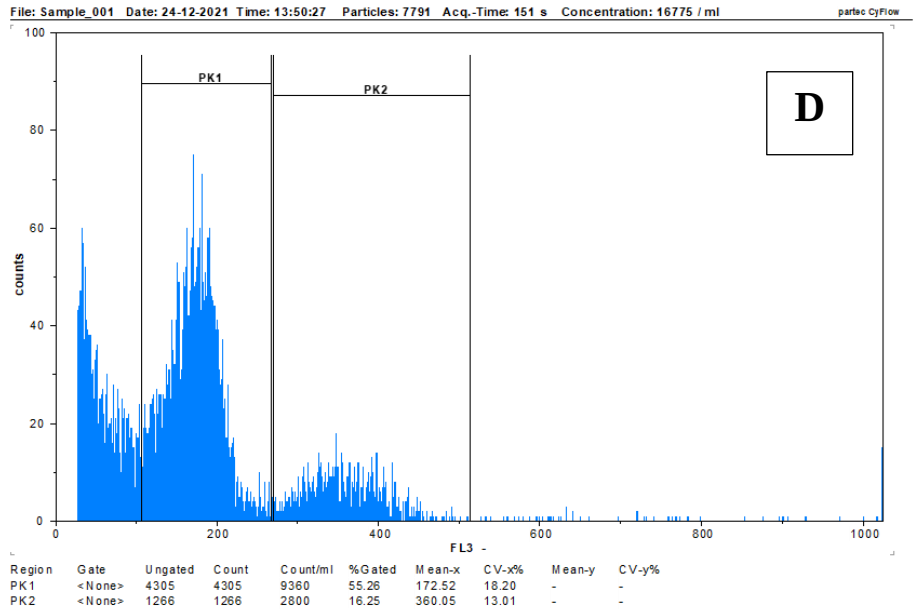




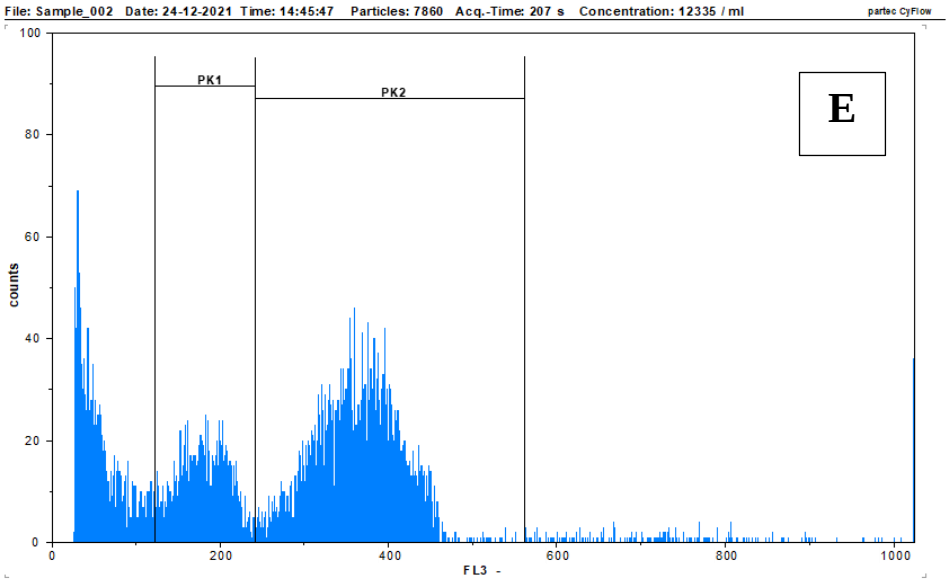
Region	Gate	Ungated	Count	Count/ml	%Gated	Mean-x	CV-x%	Mean-y	CV-y%
PK1	<None>	1017	1017	5085	28.35	196.06	14.79	-	-
PK2	<None>	1326	1326	6630	36.97	386.19	11.70	-	-



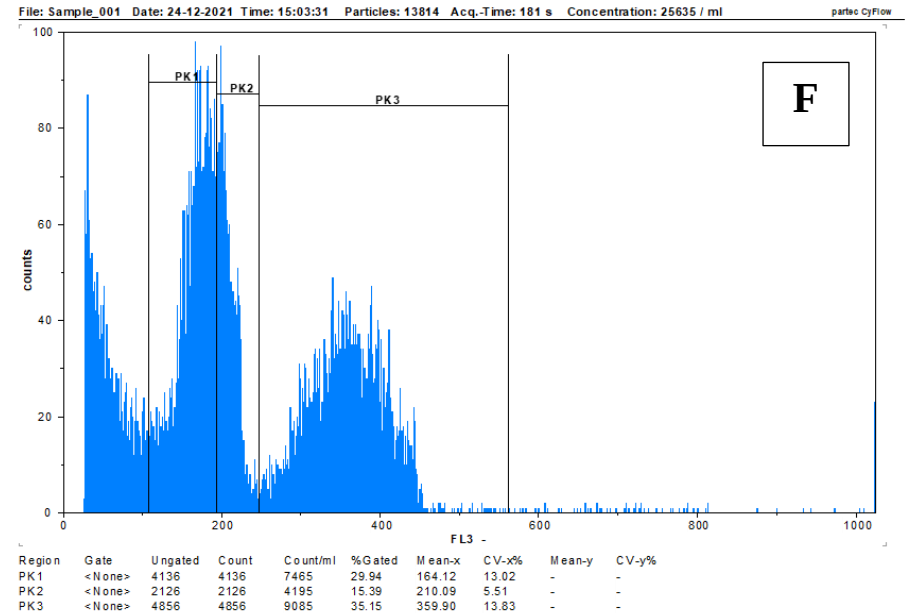
Region	Gate	Ungated	Count	Count/ml	%Gated	Mean-x	CV-x%	Mean-y	CV-y%
PK1	<None>	7749	7749	14300	52.94	182.12	14.67	-	-
PK2	<None>	3658	3658	6935	24.99	363.62	12.87	-	-

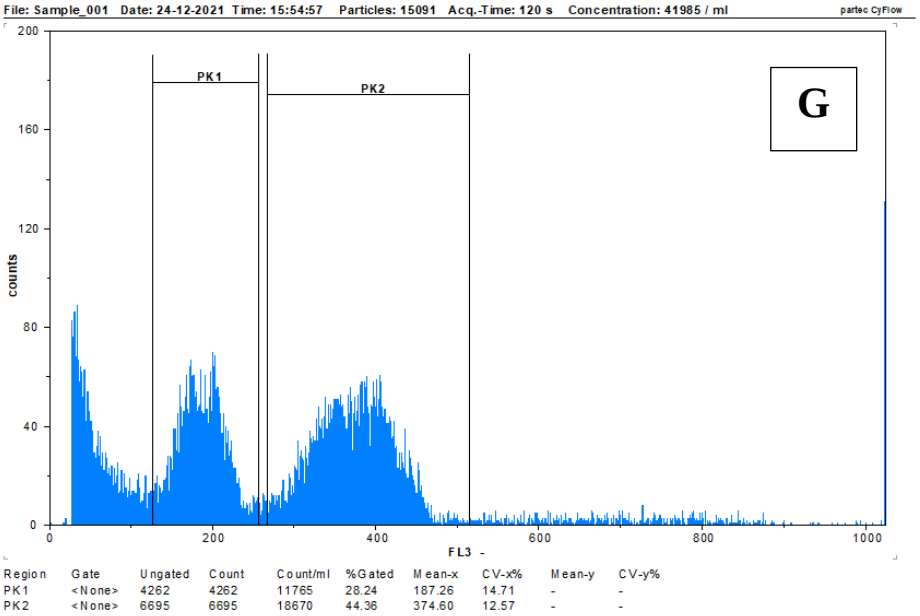


Region	Gate	Ungated	Count	Count/ml	%Gated	Mean-x	CV-x%	Mean-y	CV-y%
PK1	<None>	4305	4305	9360	55.26	172.52	18.20	-	-
PK2	<None>	1266	1266	2800	16.25	360.05	13.01	-	-



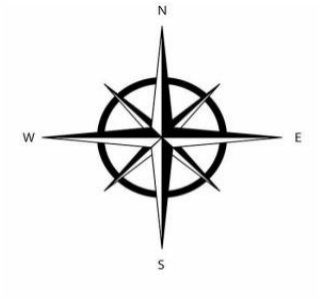
Region	Gate	Ungated	Count	Count/ml	%Gated	Mean-x	CV-x%	Mean-y	CV-y%
PK1	<None>	1593	1593	2525	20.27	181.22	15.65	-	-
PK2	<None>	4252	4252	6890	54.10	363.76	13.93	-	-





Gambar Lampiran 1. Grafik Hasil Derajat Ploidi Dengan *Flow Cytometry* Tanaman Talas Safira Hasil Induksi Kolkisin Secara *In Vitro*, (A) c0t1 (Kolkisin 0%, Perendaman 8 jam) dan c0t2 (Kolkisin 0%, perendaman 16 jam); (B) c1t1 (Kolkisin 0.05%, Perendaman 8 jam); (C) c2t1 (Kolkisin 0.075%, Perendaman 8 jam); (D) c3t1(Kolkisin 0.1%, Perendaman 8 jam); (E) c1t2 (Kolkisin 0.05%, Perendaman 16 jam); (F) c2t2 (Kolkisin 0.075%, Perendaman 16 jam); (G) c3t2 (Kolkisin 0.1%, Perendaman 16 jam).

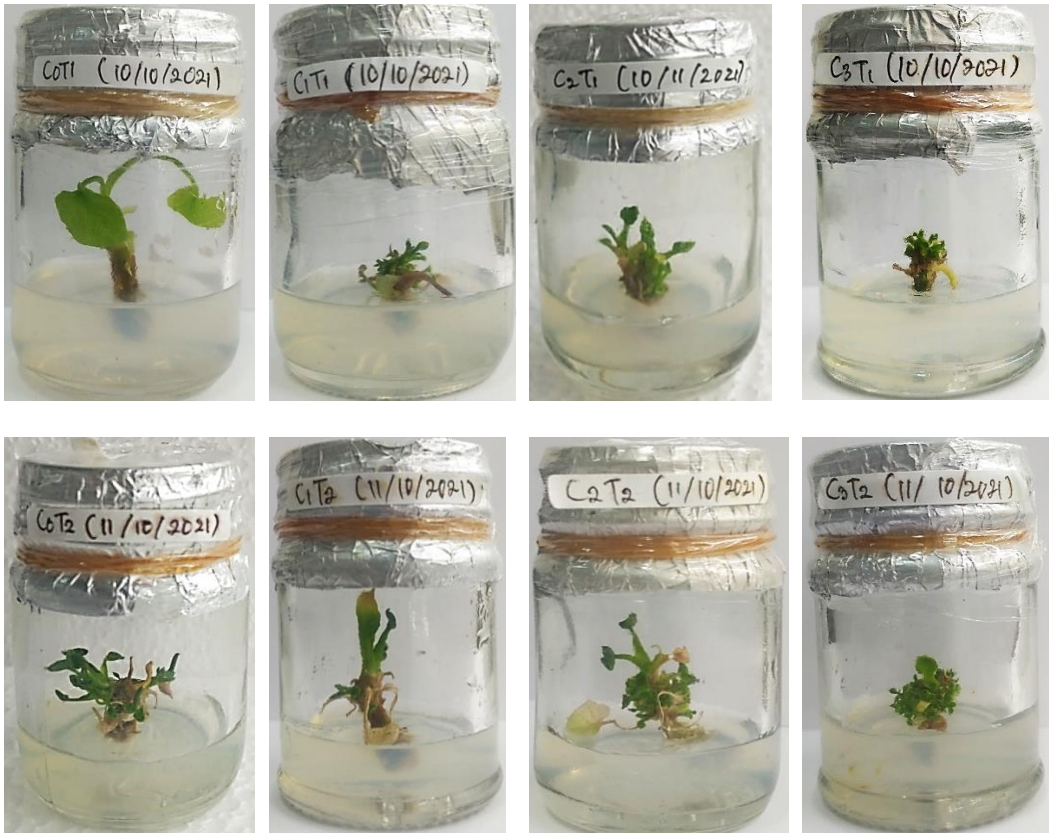
ULANGAN



I	II	III
c0t1	c1t1	c0t2
c2t1	c3t1	c1t2
c0t2	c1t2	c3t1
c2t2	c3t2	c2t1
c1t1	c0t1	c3t2
c3t1	c2t1	c2t2
c1t2	c0t2	c1t1
c3t2	c2t2	c0t1

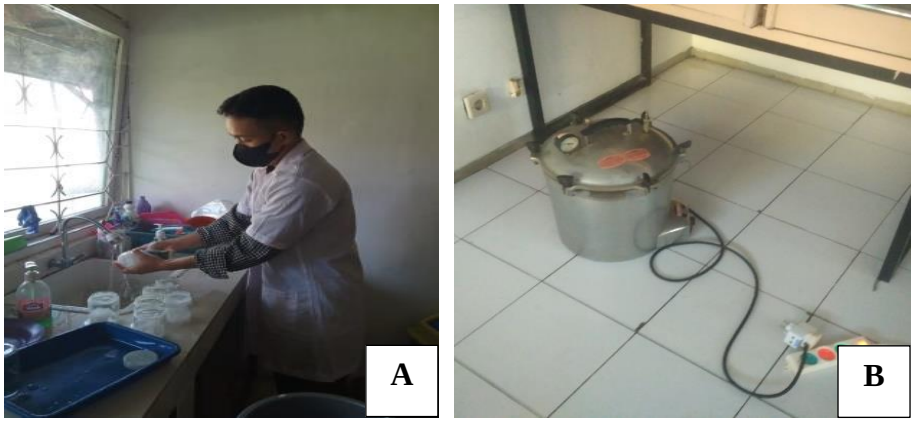
*) Catatan : Setiap perlakuan terdapat 3 tanaman

Gambar Lampiran 2. Denah Pengacakan Rancangan Acak Lengkap Faktorial 2 Faktor (RALF2F)

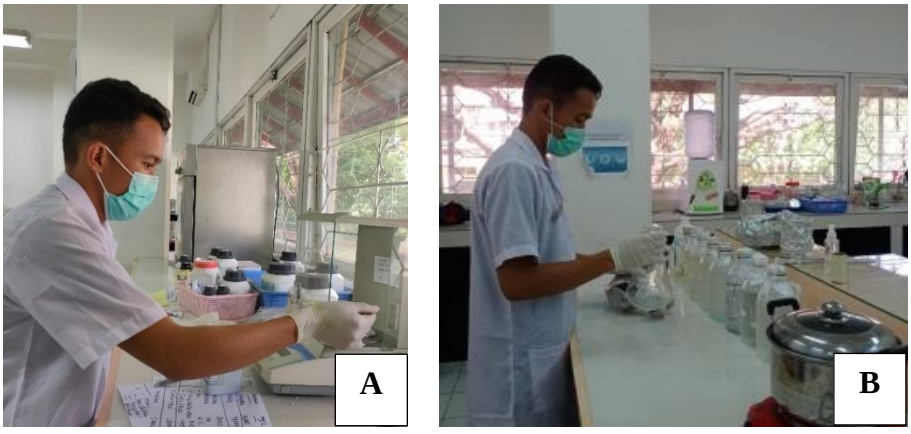


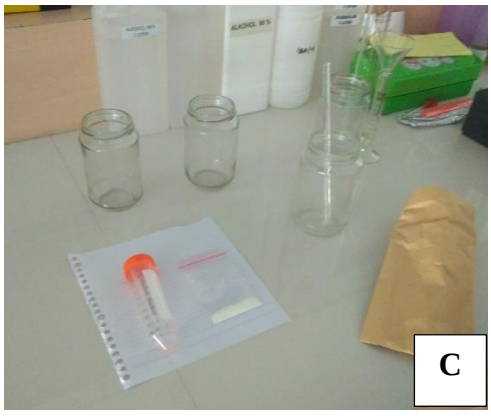
Gambar Lampiran 3. Penampilan Tanaman Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* 10 MST

Gambar Lampiran 4. Penampilan Tanaman Talas Safira Hasil Induksi Kolkisin Secara *In Vitro* 16 MST

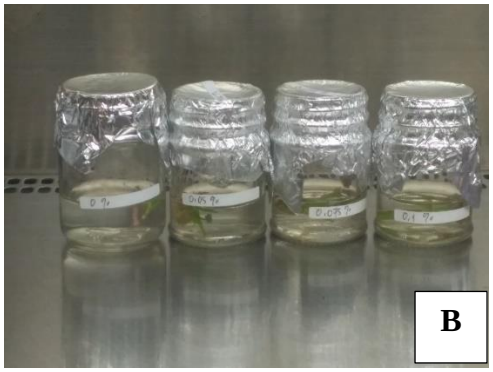


Gambar Lampiran 5. (A) Kegiatan Mencuci Peralatan Kultur, (B) Kegiatan Sterilisasi Alat Kultur dengan *Autoclave*





Gambar Lampiran 6. (A) Kegiatan Menimbang Zat Kimia untuk Pembuatan Larutan Stok MS, (B) Kegiatan Pembuatan Media MS, (C) Kegiatan Pembuatan Larutan Kolkisin



Gambar Lampiran 7. (A) Kegiatan Pemotongan Eksplan Talas Safira, (B) Kegiatan Memasukkan Eksplan ke Larutan Kolkisin Sesuai Perlakuan, (C) Kegiatan Mengshaker Eksplan yang Direndam Sesuai Dengan Perlakuan Lama Perendaman

Gambar Lampiran 8. Kegiatan Penanaman Eksplan yang Telah Direndam Dengan Kolkisin Pada Media Tanam

Gambar Lampiran 9. Kegiatan Pengamatan Sesuai Dengan Parameter Pengamatan

Gambar Lampiran 10. Kegiatan Uji Analisis Poliploid Dengan *Flow Cytometry*