DAFTAR PUSTAKA

Adubofuor, J., Amoah, I., & Osei-Bonsu, I. (2016). Sensory and physicochemical properties of pasteurized coconut water from two varieties of coconut. *Food Science and Quality Management*, *54*(October), 26–32. www.iiste.org

Appaiah, P., Sunil, L., Kumar, P. K. P., & Krishna, A. G. G. (2015). Physico-chemical characteristics and stability aspects of coconut water and kernel at different stages of maturity. *Journal of Food Science and Technology*, *52*(8), 5196–5203. https://doi.org/10.1007/s13197-014-1559-4

Awua, A. K., Doe, E. D., & Agyare, R. (2011). Exploring the influence of sterilisation and storage on some physicochemical properties of coconut (Cocos nucifera L.) water. *BMC Research Notes*, *4*. https://doi.org/10.1186/1756-0500-4-451

Awua, A. K., Doe, E. D., & Agyare, R. (2012). Potential Bacterial Health Risk Posed to Consumers of Fresh Coconut (<i>Cocos nucifera</i> L.) Water. *Food and Nutrition Sciences*, *03*(08), 1136–1143. https://doi.org/10.4236/fns.2012.38149

Camargo Prado, F., De Dea Lindner, J., Inaba, J., Thomaz-Soccol, V., Kaur Brar, S., & Soccol, C. R. (2015). Development and evaluation of a fermented coconut water beverage with potential health benefits. *Journal of Functional Foods*, *12*, 489–497. https://doi.org/10.1016/j.jff.2014.12.020

Cazón, P., Velazquez, G., Ramírez, J. A., & Vázquez, M. (2017). Polysaccharide-based films and coatings for food packaging: A review. *Food Hydrocolloids*, *68*, 136–148. https://doi.org/10.1016/j.foodhyd.2016.09.009

Chen, H. zhi, Zhang, M., Bhandari, B., & Guo, Z. (2018). Applicability of a colorimetric indicator label for monitoring freshness of fresh-cut green bell pepper. *Postharvest Biology and Technology*, *140*(November 2017), 85–92. https://doi.org/10.1016/j.postharvbio.2018.02.011

Chen, H. zhi, Zhang, M., Bhandari, B., & Yang, C. hui. (2019). Development of a novel colorimetric food package label for monitoring lean pork freshness. *Lwt*, *99*, 43–49. https://doi.org/10.1016/j.lwt.2018.09.048

Costa, H. B., Souza, L. M., Soprani, L. C., Oliveira, B. G., Ogawa, E. M., Korres, A. M. N., Ventura, J. A., & Romão, W. (2015). Monitoring the physicochemical degradation of coconut water using ESI-FT-ICR MS. *Food Chemistry*, *174*, 139–146. https://doi.org/10.1016/j.foodchem.2014.10.154

Dirpan, A., Djalal, M., & Ainani, A. F. (2022). A Simple Combination of Active and Intelligent Packaging Based on Garlic Extract and Indicator Solution in Extending and Monitoring the Meat Quality Stored at Cold Temperature. *Foods*, *11*(10). https://doi.org/10.3390/foods11101495

Dirpan, A., & Hidayat, S. H. (2023). Quality and Shelf-Life Evaluation of Fresh Beef Stored in Smart Packaging. *Foods*, *12*(369), 1–14. https://doi.org/10.3390/foods12020396

Dirpan, A., Latief, R., Syarifuddin, A., Rahman, A. N. F., Putra, R. P., & Hidayat, S. H. (2018). The use of colour indicator as a smart packaging system for evaluating mangoes Arummanis (Mangifera indica L. var. Arummanisa) freshness. *IOP Conference Series: Earth and Environmental Science*, *157*(1). https://doi.org/10.1088/1755-1315/157/1/012031

Donsingha, S., & Assatarakul, K. (2018). Kinetics model of microbial degradation by UVradiation and shelf life of coconut water. *Food Control*, *92*, 162–168. https://doi.org/10.1016/j.foodcont.2018.04.030

Ekasari, C. P., & Widyarti, S. (2019). The physicochemical properties comparison of the natural coconut water and the packaging coconut water. *IOP Conference Series: Earth and Environmental Science*, *391*(1), 0–9. https://doi.org/10.1088/1755-1315/391/1/012021

Ezati, P., Tajik, H., & Moradi, M. (2019). Fabrication and characterization of alizarin colorimetric indicator based on cellulose-chitosan to monitor the freshness of minced beef. *Sensors and Actuators, B: Chemical*, *285*(November 2018), 519–528. https://doi.org/10.1016/j.snb.2019.01.089

Haseena, M., Bai, K. V. K., & Padmanabhan, S. (2010). Post-harvest quality and shelf-life of tender coconut. *Journal of Food Science and Technology*, *47*(6), 686–689. https://doi.org/10.1007/s13197-010-0097-y

Hidayat, S. H., Dirpan, A., Adiansyah, Djalal, M., Rahman, A. N. F., & Ainani, A. F. (2019). Sensitivity determination of indicator paper as smart packaging elements in monitoring meat freshness in cold temperature. *IOP Conference Series: Earth and Environmental Science*, *343*(1). https://doi.org/10.1088/1755-1315/343/1/012076

Intan Kailaku, S., Setiawan, B., & Sulaeman, A. (2017). The Shelf Life Estimation of Cold Sterilized Coconut Water. *Planta Tropika: Journal of Agro Science*, *5*(1), 62–69. https://doi.org/10.18196/pt.2017.072.62-69

Jayasinghe, M. D., Madage, S. S. K., Hewajulige, I. G. N., Jayawardana, T. M. D. A., Halmillawewa, A. P., & Divisekera, D. M. W. D. (2022). Identification of Potentially Hazardous Microorganisms and Assessment of Physicochemical Deterioration of Thermally Processed King Coconut (Cocos nucifera var. aurantiaca) Water under Different Processing Conditions in Sri Lanka. *Journal of Food Quality*, *2022*. https://doi.org/10.1155/2022/6752088

Jirapong, C., Wongs-Aree, C., Noichinda, S., Uthairatanakij, A., & Kanlayanarat, S. (2015). Assessment of volatile and non-volatile organic compounds in the liquid endosperm of young 'nam hom' coconut (Cocos nucifera l.) at two stages of maturity. *Journal of Horticultural Science and Biotechnology*, *90*(5), 477–482. https://doi.org/10.1080/14620316.2015.11668703

Jung, J., Lee, K., Puligundla, P., & Ko, S. (2013). Chitosan-based carbon dioxide indicator to communicate the onset ofkimchiripening. *Lwt*, *54*(1), 101–106. https://doi.org/10.1016/j.lwt.2013.05.004

K.D.P.P. Gunathilake. (2012). Optimum Physico-Chemical and Processing Parameters for the Preservation of King Coconut Water. *Cord*, *28*(1), 8. https://doi.org/10.37833/cord.v28i1.104

Kamaruddin, I., Dirpan, A., & Bastian, F. (2021). The novel trend of bacterial cellulose as biodegradable and oxygen scavenging films for food packaging application : An integrative review. *IOP Conference Series: Earth and Environmental Science*, *807*(2). https://doi.org/10.1088/1755-1315/807/2/022066

Kannangara, A. C., Ranaweera, K., Kannangara, A. C., & Chandrajith, V. (2018). Comparative analysis of coconut water in four different maturity stages. *Journal of Pharmacognosy and Phytochemistry*, *7*(3), 1814–1817. https://www.researchgate.net/publication/325676226

Kim, Y. H., Yang, Y. J., Kim, J. S., Choi, D. S., Park, S. H., Jin, S. Y., & Park, J. S. (2018). Non-destructive monitoring of apple ripeness using an aldehyde sensitive colorimetric sensor. *Food Chemistry*, *267*(October 2017), 149–156. https://doi.org/10.1016/j.foodchem.2018.02.110

Kuswandi, B., Jayus, Larasati, T. S., Abdullah, A., & Heng, L. Y. (2012). Real-Time Monitoring of Shrimp Spoilage Using On-Package Sticker Sensor Based on Natural Dye of Curcumin. *Food Analytical Methods*, *5*(4), 881–889. https://doi.org/10.1007/s12161-011-9326-x

Kuswandi, B., & Murdyaningsih, E. A. (2017). Simple on package indicator label for monitoring of grape ripening process using colorimetric pH sensor. *Journal of Food Measurement and Characterization*, *11*(4), 2180–2194. https://doi.org/10.1007/s11694-017-9603-5

Kuswandi, B., Wicaksono, Y., Jayus, Abdullah, A., Heng, L. Y., & Ahmad, M. (2011). Smart packaging: Sensors for monitoring of food quality and safety. *Sensing and Instrumentation for Food Quality and Safety*, *5*(3–4), 137–146. https://doi.org/10.1007/s11694-011-9120-x

Lagasse, M. K., Rankin, J. M., Askim, J. R., & Suslick, K. S. (2014). Colorimetric sensor arrays: Interplay of geometry, substrate and immobilization. *Sensors and Actuators, B: Chemical*, *197*, 116–122. https://doi.org/10.1016/j.snb.2014.01.102

Lee, H. G., Jeong, S., & Yoo, S. R. (2023). Development of a calcium hydroxide–dye kimchi ripening indicator and its application in kimchi packaging. *Food Chemistry*, *400*(March 2022), 134039. https://doi.org/10.1016/j.foodchem.2022.134039

Ma, Q., Du, L., & Wang, L. (2017). Tara gum/polyvinyl alcohol-based colorimetric NH3 indicator films incorporating curcumin for intelligent packaging. *Sensors and Actuators, B: Chemical*, *244*, 759–766. https://doi.org/10.1016/j.snb.2017.01.035

Ma, Y., Xu, L., Wang, S., Xu, Z., Liao, X., & Cheng, Y. (2019). Comparison of the quality attributes of coconut waters by high-pressure processing and high-temperature short time during the refrigerated storage. *Food Science and Nutrition*, *7*(4), 1512–1519. https://doi.org/10.1002/fsn3.997

Mills, A., Skinner, G. A., & Grosshans, P. (2010). Intelligent pigments and plastics for CO2 detection. *Journal of Materials Chemistry*, *20*(24), 5008–5010. https://doi.org/10.1039/c0jm00582g

Müller, P., & Schmid, M. (2019). Intelligent packaging in the food sector: A brief overview. *Foods*, *8*(1). https://doi.org/10.3390/foods8010016

Noiwan, D., Suppakul, P., & Rachtanapun, P. (2022). Preparation of Methylcellulose Film-Based CO2 Indicator for Monitoring the Ripeness Quality of Mango Fruit cv. Nam Dok Mai Si Thong. *Polymers*, *14*(17). https://doi.org/10.3390/polym14173616

Nopwinyuwong, A., Trevanich, S., & Suppakul, P. (2010). Development of a novel colorimetric indicator label for monitoring freshness of intermediate-moisture dessert spoilage. *Talanta*, *81*(3), 1126–1132. https://doi.org/10.1016/j.talanta.2010.02.008

Obaidi, A. Al, Karaca, I. M., Ayhan, Z., Haskaraca, G., & Gultekin, E. (2022). Fabrication and validation of CO2-sensitive indicator to monitor the freshness of poultry meat. *Food Packaging and Shelf Life*, *34*(May), 100930. https://doi.org/10.1016/j.fpsl.2022.100930

Oliveira, R. L., Vieira, J. G., Barud, H. S., Assunção, R. M. N., Filho, G. R., Ribeiro, S. J. L., & Messadeqq, Y. (2015). Synthesis and characterization of methylcellulose produced from bacterial cellulose under heterogeneous condition. *Journal of the Brazilian Chemical Society*, *26*(9), 1861–1870. https://doi.org/10.5935/0103-5053.20150163

Paixão, L. C., Lopes, I. A., Barros Filho, A. K. D., & Santana, A. A. (2019). Alginate biofilms plasticized with hydrophilic and hydrophobic plasticizers for application in food packaging. *Journal of Applied Polymer Science*, *136*(48), 1–11. https://doi.org/10.1002/app.48263

Pandiselvam, R., Manikantan, M. R., Balasubramanian, D., Beegum, P. P. S., Mathew, A. C., Ramesh, S. V., Hebbar, K. B., & Niral, V. (2020). Mechanical properties of tender coconut (Cocos nucifera L.): Implications for the design of processing machineries. *Journal of Food Process Engineering*, *43*(2), 1–8. https://doi.org/10.1111/jfpe.13349

R.W, S. (2008). *Handbook of acid-base indicators 2008 - Sabnis.pdf*.

Rismaya, R., Syamsir, E., Nurtama, B., & Tohyeng, N. (2022). Effects of water addition and baking time on the production process optimization of pumpkin muffins: Pilot plant study. *Canrea Journal: Food Technology, Nutritions, and Culinary Journal*, *5*(2), 183–207. https://doi.org/10.20956/canrea.v5i2.711

Romão, S., Bettencourt, A., & Ribeiro, I. A. C. (2022). Novel Features of Cellulose-Based Films as Sustainable Alternatives for Food Packaging. *Polymers*, *14*(22). https://doi.org/10.3390/polym14224968

Saad, A., Gawad Saad, A., Jaiswal, P., & Narayan Jha, S. (2014). Non-destructive quality evaluation of intact tomato using VIS-NIR spectroscopy Related papers Non-destructive quality evaluation of intact tomato using VIS-NIR spectroscopy. *International Journal of Advanced Research*, *2*(January 2015), 632–639. http://www.journalijar.com

Sani, M. A., Tavassoli, M., Hamishehkar, H., & McClements, D. J. (2021a). Carbohydrate-based films containing pH-sensitive red barberry anthocyanins: Application as biodegradable smart food packaging materials. *Carbohydrate Polymers*, *255*, 117488.

Sani, M. A., Tavassoli, M., Hamishehkar, H., & McClements, D. J. (2021b). Carbohydrate-based films containing pH-sensitive red barberry anthocyanins: Application as biodegradable smart food packaging materials. *Carbohydrate Polymers*, *255*(November 2020), 117488. https://doi.org/10.1016/j.carbpol.2020.117488

Sari, N., Darmawati, E., & Ahmad, U. (2022). Desain Kemasan Ritel Untuk Buah Alpukat Berlabel Indikator Kematangan. *Jurnal Keteknikan Pertanian*, *10*(3), 291–304.

Schaefer, D., & Cheung, W. M. (2018). Smart Packaging: Opportunities and Challenges. *Procedia CIRP*, *72*, 1022–1027. https://doi.org/10.1016/j.procir.2018.03.240

Seddiqi, H., Oliaei, E., Honarkar, H., Jin, J., Geonzon, L. C., Bacabac, R. G., & Klein-Nulend, J. (2021). Cellulose and its derivatives: towards biomedical applications. In *Cellulose* (Vol. 28, Issue 4). Springer Netherlands. https://doi.org/10.1007/s10570-020-03674-w

Shaalan, N. M., Ahmed, F., Saber, O., & Kumar, S. (2022). Gases in Food Production and Monitoring: Recent Advances in Target Chemiresistive Gas Sensors. *Chemosensors*, *10*(8), 1–20. https://doi.org/10.3390/chemosensors10080338

Shaik, M. I., Azhari, M. F., & Sarbon, N. M. (2022). Gelatin-Based Film as a Color Indicator in Food-Spoilage Observation: A Review. *Foods*, *11*(23). https://doi.org/10.3390/foods11233797

Shankar, V., Mahboob, S., Al-Ghanim, K. A., Ahmed, Z., Al-Mulhm, N., & Govindarajan, M. (2021). A review on microbial degradation of drinks and infectious diseases: A perspective of human well-being and capabilities. *Journal of King Saud University - Science*, *33*(2), 101293. https://doi.org/10.1016/j.jksus.2020.101293

Shao, P., Liu, L., Yu, J., Lin, Y., Gao, H., Chen, H., & Sun, P. (2021). An overview of intelligent freshness indicator packaging for food quality and safety monitoring. *Trends in Food Science and Technology*, *118*(PA), 285–296. https://doi.org/10.1016/j.tifs.2021.10.012

Shubhashree. M.N, V. G., & H, D. S. (2014). Therapeutic and Nutritional Values of Narikelodaka (Tender Coconut Water)-A Review. *Research Journal of Pharmacognosy and Phytochemistry*, *6*(4), 195–201. www.anvpublication.org

Sohail, M., Sun, D. W., & Zhu, Z. (2018). Recent developments in intelligent packaging for enhancing food quality and safety. *Critical Reviews in Food Science and Nutrition*, *58*(15), 2650–2662. https://doi.org/10.1080/10408398.2018.1449731

Souza, A. S. de, Coutinho, J. P., Souza, L. B. B. C. de, Barbosa, D. P., da Silva Júnior, A. L. S., & Paixão, M. V. S. (2020). Physical-Chemical Characterization of Fermented Coconut Water (Cocos nucifera L). *International Journal of Advanced Engineering Research and Science*, *7*(5), 247–255. https://doi.org/10.22161/ijaers.75.30

Tan, T. C., Cheng, L. H., Bhat, R., Rusul, G., & Easa, A. M. (2014). Composition, physicochemical properties and thermal inactivation kinetics of polyphenol oxidase and peroxidase from coconut (Cocos nucifera) water obtained from immature, mature and overly-mature coconut. *Food Chemistry*, *142*, 121–128. https://doi.org/10.1016/j.foodchem.2013.07.040

Tyl, C., & Sadler, G. D. (2017). pH and Titratable Acidity. In: Nielsen, S.S. (eds) Food Analysis. Food Science Text Series. Springer, Cham. *Food Analysis*, 389–406. https://doi.org/10.1007/978-3-319-45776-5

Yin, C. S. (2016). Coconut Handbook. Tetra Pak South East Asia Pte Ltd Coconut Knowledge Center, Singapore.

Yousefi, H., Su, H. M., Imani, S. M., Alkhaldi, K., Filipe, C. D., & Didar, T. F. (2019). Intelligent Food Packaging: A Review of Smart Sensing Technologies for Monitoring Food Quality. *ACS Sensors*, *4*(4), 808–821. https://doi.org/10.1021/acssensors.9b00440

Zhang, G., Chen, W., Chen, W., & Chen, H. (2018). Improving the quality of matured coconut (Cocos nucifera Linn.) water by low alcoholic fermentation with Saccharomyces cerevisiae: antioxidant and volatile profiles. *Journal of Food Science and Technology*, *55*(3), 964–976. https://doi.org/10.1007/s13197-017-3004-y

Zhang, Y., & Lim, L. T. (2018). Colorimetric array indicator for NH3 and CO2 detection. *Sensors and Actuators, B: Chemical*, *255*, 3216–3226. https://doi.org/10.1016/j.snb.2017.09.148

LAMPIRAN

Lampiran 01. Hasil Pengujian Kualitas Air Kelapa Muda Selama Penyimpanan

Waktu Penyimpanan (Jam)	pH	TPT (°Brix)	Total Asam (%)	Kekeruhan (NTU)	Log TPC (CFU/mL)	CO_2 (%)	O_2 (%)
0	5,22	5,43	0,1072	28,83	3,46	0,0622	25
4	5,22	5,40	0,1139	29,26	4,30	0,2897	17,8
8	5,20	5,37	0,1117	31,48	5,78	0,3497	10,7
12	5,16	5,33	0,1385	38,67	7,00	0,3818	3,9
16	5,14	5,30	0,1608	80,50	7,97	0,4058	0
20	5,09	5,20	0,2032	153,83	8,29	0,4245	0
24	4,64	5,10	0,2702	290,17	8,53	0,4398	0

Lampiran 02. Hasil Pengujian Warna Label Indikator Kesegaran

Waktu Penyimpanan (Jam)	Phenol Red		Bromothymol Blue		Methyl Red	
	°Hue	ΔE	°Hue	ΔE	°Hue	ΔE
0	346,67	0,00	213,67	0,00	101,66	0,00
4	78,00	14,55	172,33	8,89	101,66	8,27
8	75,66	14,07	156,00	14,25	93,33	8,79
12	83,00	16,70	135,67	15,34	90,00	7,90
16	101,67	22,62	126,00	18,04	97,00	6,89
20	101,33	26,14	111,00	20,58	81,33	8,21
24	101,33	24,59	109,00	19,84	79,33	11,82

Lampiran 03. Hasil Pengujian pH Air Kelapa Muda Selama Penyimpanan

Waktu Penyimpanan (Jam)	pH			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	5,23	5,22	5,22	5,22
4	5,22	5,23	5,22	5,22
8	5,19	5,20	5,21	5,20
12	5,17	5,16	5,15	5,16
16	5,15	5,15	5,14	5,14
20	5,10	5,10	5,07	5,09
24	4,65	4,63	4,64	4,64

Lampiran 04. Hasil Analisis Sidik Ragam pH Air Kelapa Muda Selama Penyimpanan

ANOVA

pH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.774	6	.129	1.289E3	.000
Within Groups	.001	14	.000		
Total	.775	20			

Lampiran 05. Hasil Uji Lanjut Duncan pH Air Kelapa Muda Selama Penyimpanan

pH

Duncan

Waktu Penyimpanan	N	Subset for alpha = 0.05				
		1	2	3	4	5
24 Jam	3	4.6400				
20 Jam	3		5.0900			
16 Jam	3			5.1467		
12 Jam	3			5.1600		
8 Jam	3				5.2000	
0 Jam	3					5.2233
4 Jam	3					5.2233
Sig.		1.000	1.000	.125	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 06. Hasil Pengujian Total Asam Air Kelapa Muda Selama Penyimpanan

Waktu Penyimpanan (Jam)	Total Asam			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	0,1005	0,1072	0,1139	0,1072
4	0,1206	0,1072	0,1139	0,1139
8	0,1139	0,1072	0,1139	0,1117
12	0,1742	0,1072	0,1340	0,1385
16	0,1943	0,1474	0,1407	0,1608
20	0,2077	0,2010	0,2010	0,2032
24	0,2680	0,2613	0,2814	0,2702

Lampiran 07. Hasil Analisis Sidik Ragam Total Asam Air Kelapa Muda Selama Penyimpanan

ANOVA

Total Asam

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.065	6	.011	34.302	.000
Within Groups	.004	14	.000		
Total	.070	20			

Lampiran 08. Hasil Uji Lanjut Duncan Total Asam Air Kelapa Muda Selama Penyimpanan

Total Asam

Duncan

Waktu Penyimpanan	N	Subset for alpha = 0.05			
		1	2	3	4
0 Jam	3	.107200			
8 Jam	3	.111667			
4 Jam	3	.113900			
12 Jam	3	.138467	.138467		
16 Jam	3		.160800		
20 Jam	3			.203233	
24 Jam	3				.270233
Sig.		.066	.146	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 09. Hasil Pengujian Total Padatan Terlarut Air Kelapa Muda Selama Penyimpanan

Waktu Penyimpanan (Jam)	Total Padatan Terlarut			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	5,40	5,40	5,50	5,43
4	5,40	5,40	5,40	5,40
8	5,30	5,40	5,40	5,37
12	5,30	5,35	5,40	5,33
16	5,40	5,10	5,40	5,30
20	5,20	5,20	5,30	5,20
24	5,10	5,10	5,20	5,10

Lampiran 10. Hasil Analisis Sidik Ragam Total Padatan Terlarut Air Kelapa Muda Selama Penyimpanan

ANOVA

Total Padatan Terlarut

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.195	6	.033	4.964	.006
Within Groups	.092	14	.007		
Total	.287	20			

Lampiran 11. Hasil Uji Lanjut Duncan Total Padatan Terlarut Air Kelapa Muda Selama Penyimpanan

Total Padatan Terlarut

Duncan

Waktu Penyimpanan	N	Subset for alpha = 0.05		
		1	2	3
24 Jam	3	5.1333		
20 Jam	3	5.2333	5.2333	
16 Jam	3		5.3000	5.3000
12 Jam	3		5.3500	5.3500
8 Jam	3		5.3667	5.3667
4 Jam	3			5.4000
0 Jam	3			5.4333
Sig.		.152	.083	.088

Means for groups in homogeneous subsets are displayed.

Lampiran 12. Hasil Pengujian Kekeruhan Air Kelapa Muda Selama Penyimpanan

Waktu Penyimpanan (Jam)	Kekeruhan			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	27,40	29,11	29,99	28,83
4	29,69	28,50	29,60	29,26
8	30,70	32,60	31,14	31,48
12	39,67	38,46	37,88	38,67
16	73,00	82,00	86,50	80,50
20	140,00	136,00	185,50	153,83
24	257,00	334,50	279,00	290,17

Lampiran 13. Hasil Analisis Sidik Ragam Kekeruhan Air Kelapa Muda Selama Penyimpanan

ANOVA

Turbidity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	172942.158	6	28823.693	83.985	.000
Within Groups	4804.827	14	343.202		
Total	177746.985	20			

Lampiran 14. Hasil Uji Lanjut Duncan Kekeruhan Air Kelapa Muda Selama Penyimpanan

Turbidity

Duncan

Waktu Penyimpanan	N	Subset for alpha = 0.05			
		1	2	3	4
0 Jam	3	28.8333			
4 Jam	3	29.2633			
8 Jam	3	31.4800			
12 Jam	3	38.6700			
16 Jam	3		80.5000		
20 Jam	3			1.5383E2	
24 Jam	3				2.9017E2
Sig.		.558	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 15. Hasil Pengujian Total Mikroba Air Kelapa Muda Selama Penyimpanan

Waktu Penyimpanan (Jam)	Log TPC			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	3,54	3,38	3,46	3,46
4	4,22	4,38	4,31	4,30
8	5,77	5,79	5,78	5,78
12	6,96	7,04	7,00	7,00
16	7,87	7,90	8,15	7,97
20	8,24	8,34	8,30	8,29
24	8,60	8,45	8,54	8,53

Lampiran 16. Hasil Analisis Sidik Ragam Total Mikroba Air Kelapa Muda Selama Penyimpanan

ANOVA

Log TPC

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	73.018	6	12.170	1.836E3	.000
Within Groups	.093	14	.007		
Total	73.111	20			

Lampiran 17. Hasil Uji Lanjut Duncan Total Mikroba Air Kelapa Muda Selama Penyimpanan

Log TPC

Duncan

Waktu Penyimpanan	N	Subset for alpha = 0.05						
		1	2	3	4	5	6	7
0 Jam	3	3.4600						
4 Jam	3		4.3033					
8 Jam	3			5.7800				
12 Jam	3				7.0000			
16 Jam	3					7.9733		
20 Jam	3						8.2933	
24 Jam	3							8.5300
Sig.		1.000	1.000	1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 18. Hasil Pengujian °Hue Label Indikator Kesegaran Phenol Red Selama Penyimpanan

Waktu Penyimpanan (Jam)	°Hue Phenol Red			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	348	352	340	346,67
4	78	78	78	78,00
8	79	74	74	75,66
12	87	82	80	83,00
16	109	97	99	101,67
20	101	102	101	101,33
24	103	98	103	101,33

Lampiran 19. Hasil Analisis Sidik Ragam °Hue Label Indikator Kesegaran Phenol Red Selama Penyimpanan

ANOVA

Hue Phenol Red

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	171553.905	6	28592.317	1.842E3	.000
Within Groups	217.333	14	15.524		
Total	171771.238	20			

Lampiran 20. Hasil Uji Lanjut Duncan °Hue Label Indikator Kesegaran Phenol Red Selama Penyimpanan

Hue Phenol Red

Duncan

Waktu Penyimpanan	N	Subset for alpha = 0.05			
		1	2	3	4
8 Jam	3	75.6667			
4 Jam	3	78.0000	78.0000		
12 Jam	3		83.0000		
20 Jam	3			1.0133E2	
24 Jam	3			1.0133E2	
16 Jam	3			1.0167E2	
0 Jam	3				3.4667E2
Sig.		.480	.142	.923	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 21. Hasil Pengujian °Hue Label Indikator Kesegaran Bromothymol Blue Selama Penyimpanan

Waktu Penyimpanan (Jam)	°Hue Bromothymol Blue			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	213	224	204	213,67
4	187	176	154	172,33
8	182	171	115	156,00
12	155	139	113	135,67
16	148	119	111	126,00
20	113	111	109	111,00
24	111	109	107	109,00

Lampiran 22. Hasil Analisis Sidik Ragam °Hue Label Indikator Kesegaran Bromothymol Blue Selama Penyimpanan

ANOVA

Hue Bromothymol Blue

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25417.810	6	4236.302	11.814	.000
Within Groups	5020.000	14	358.571		
Total	30437.810	20			

Lampiran 23. Hasil Uji Lanjut Duncan °Hue Label Indikator Kesegaran Bromothymol Blue Selama Penyimpanan

Hue Bromothymol Blue

Duncan

Waktu Penyimpanan	N	Subset for alpha = 0.05			
		1	2	3	4
24 Jam	3	1.0900E2			
20 Jam	3	1.1100E2			
16 Jam	3	1.2600E2	1.2600E2		
12 Jam	3	1.3567E2	1.3567E2		
8 Jam	3		1.5600E2	1.5600E2	
4 Jam	3			1.7233E2	
0 Jam	3				2.1367E2
Sig.		.133	.086	.309	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 24. Hasil Pengujian °Hue Label Indikator Kesegaran Methyl Red Selama Penyimpanan

Waktu Penyimpanan (Jam)	°Hue Methyl Red			Rata-rata
	Ulangan 1	Ulangan 2	Ulangan 3	
0	100	102	103	101,66
4	100	100	105	101,66
8	100	81	99	93,33
12	99	73	98	90,00
16	123	78	90	97,00
20	90	73	81	81,33
24	87	70	81	79,33

Lampiran 25. Hasil Analisis Sidik Ragam °Hue Label Indikator Kesegaran Methyl Red Selama Penyimpanan

ANOVA

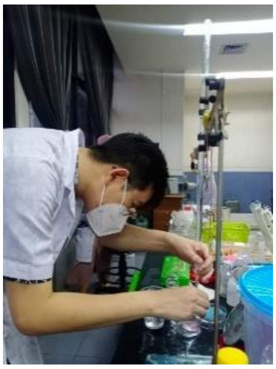
Hue Methyl Red

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1475.619	6	245.937	1.669	.201
Within Groups	2063.333	14	147.381		
Total	3538.952	20			

Lampiran 26. Dokumentasi Penelitian

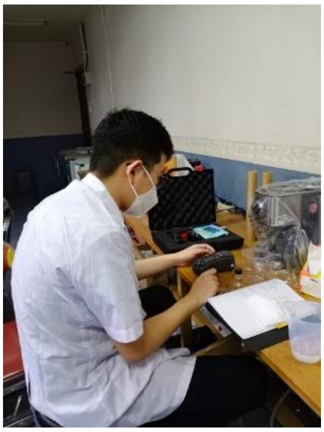
pH

Total Asam



Total Padatan Terlarut

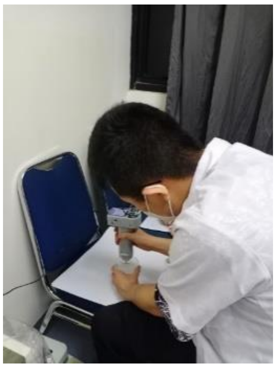
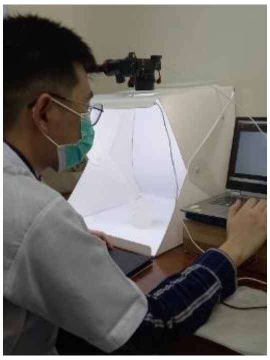
Kekeruhan



Total Mikroba

Pengukuran Gas Karbon Dioksida dan Oksigen

Kolorimetri

FTIR