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REFERENCES

Abdel-Aal, E. S. M., & Rabalski, I. (2013). Effect of baking on free and bound phenolic acids in wholegrain bakery products. *Journal of Cereal Science*, 57(3), 312–318. https://doi.org/10.1016/J.JCS.2012.12.001

Acun, S., & Gül, H. (2014). Effects of grape pomace and grape seed flours on cookie quality. Quality Assurance and Safety of Crops & Foods, 6(1), 81–88. https://doi.org/10.3920/QAS2013.0264

Adekola, K. A., Salleh, A. B., Zaidan, U. H., Azlan, A., Chiavaro, E., & Paciulli, M. (2017). Total phenolic content, antioxidative and antidiabetic properties of coconut (Cocos nucifera L.) testa and selected bean seed coats. Italian Journal of Food Science, 29(4), 741–753. https://doi.org/https://doi.org/10.14674/IJFS-941

Adisakwattana, S. (2017). Cinnamic acid and its derivatives: Mechanisms for prevention and management of diabetes and its complications. In Nutrients (Vol. 9, Issue 2). MDPI AG. https://doi.org/10.3390/nu9020163

Agostini-costa, T. da S. (2018). Bioactive compounds and health benefits of some palm species traditionally used in Africa and the Americas – A review. Journal of Ethnopharmacology, 224(October 2017), 202–229. https://doi.org/10.1016/j.jep.2018.05.035

Ahmad, M., Wani, T. A., Wani, S. M., Masoodi, F. A., & Gani, A. (2016). Incorporation of carrot pomace powder in wheat flour: effect on flour, dough and cookie characteristics. Journal of Food Science and Technology, 53(10), 3715–3724. https://doi.org/10.1007/s13197-016-2345-2

Ajay, S., Madhan, S., Vadivel, V., & Brindha, P. (2016). Recovery of polyphenols from agro-food byproducts: Coconut shell and groundnut hull. International Journal of Pharmaceutical Sciences Review and Research, 41(31), 161–167.

Akhter, A., Zaman, S., Ali, U., Ali, Y., & Miah, M. A. J. (2009). Isolation of Polyphenolic Compounds from the Green Coconut (cocos nucifera) Shell and Characterization of their Benzoyl Ester Derivatives. Journal of Scientific Research, 2(1), 186–190. https://doi.org/10.3329/jsr.v2i1.2659

Aksoylu, Z., Çağindi, Ö., & Köse, E. (2015). Effects of Blueberry, Grape Seed Powder and Poppy Seed Incorporation on Physicochemical and Sensory Properties of Biscuit. Journal of Food Quality, 38(3), 164–174. https://doi.org/10.1111/JFQ.12133

Aliaño-González, M. J., Barea-Sepúlveda, M., Espada-Bellido, E., Ferreiro-González, M., López-Castillo, J. G., Palma, M., Barbero, G. F., & Carrera, C. (2022). Ultrasound-Assisted Extraction of Total Phenolic Compounds and Antioxidant Activity in Mushrooms. Agronomy, 12(8), 1812. https://doi.org/10.3390/agronomy12081812

Al-Saab, A. H., & Gadallah, M. G. E. (2021). Phytochemicals, antioxidant activity and quality properties of fibre enriched cookies incorporated with

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

orange peel powder. Food Research, 5(4), 72–79. https://doi.org/10.26656/fr.2017.5(4).698

Anderson, J. K. M. K. A. W. V. W. C., Baird, P., Davis, R. J., Ferreri, S., Knudtson, M., Koraym, A., Waters, V., & Williams, C. (2009). Health benefits of dietary fiber. Nutrition Reviews, 67(4), 188–205.

Apak, R., Güçlü, K., Özyürek, M., Karademir, S.E., Altun, M. (2005) Total Antioxidant Capacity Assay of Human Serum Using Copper(II)-Neocuproine as Chromogenic Oxidant: The CUPRAC Method. *Free Radic. Res.,* 39, 949–961.

Appaiah, P., L, S., A G, G. K., & G, S. K. (2016). Phytochemicals and Antioxidant Activity of Testa Extracts of Commercial Wet and Dry Coconuts and Cakes. International Research Journal of Pharmacy, 7(9), 9–13. https://doi.org/10.7897/2230-8407.079106

Arena, N., Lee, J., & Clift, R. (2016). Life Cycle Assessment of activated carbon production from coconut shells. Journal of Cleaner Production, 125, 68–77. https://doi.org/10.1016/j.jclepro.2016.03.073

Arivalagan, M., Roy, T. K., Yasmeen, A. M., Pavithra, K. C., Jwala, P. N., Shivasankara, K. S., Manikantan, M. R., Hebbar, K. B., & Kanade, S. R. (2018). Extraction of phenolic compounds with antioxidant potential from coconut (Cocos nucifera L.) testa and identification of phenolic acids and flavonoids using UPLC coupled with TQD-MS/MS. LWT - Food Science and Technology, 92(November 2017), 116–126. https://doi.org/10.1016/j.lwt.2018.02.024

Asma, F. Z., Rodiah, M. H., Aziah, M. Y., Norakma, M. N., & Nurhafizah, I. (2015). Ultrasound-Assisted Extraction of Natural Dye from Exocarp and Mesocarp of Cocos nucifera. Advanced Materials Research, 1113, 477–480. https://doi.org/10.4028/www.scientific.net/amr.1113.477

Avelino, F., Silva, K. T., Mazzetto, S. E., & Lomonaco, D. (2019). Tailor-made organosolv lignins from coconut wastes effects of green solvents in microwave-assisted processes upon their structure and antioxidant activities. Bioresource Technology Reports.

Ayala, A., Muñoz, M. F., & Argüelles, S. (2014). Lipid peroxidation: Production, metabolism, and signaling mechanisms of malondialdehyde and 4-hydroxy-2-nonenal. In Oxidative Medicine and Cellular Longevity (Vol. 2014). Landes Bioscience. https://doi.org/10.1155/2014/360438

Azaroual, L., Liazid, A., El Mansouri, F., Brigui, J., Ruíz-Rodriguez, A., Barbero, G. F., & Palma, M. (2021). Optimization of the microwave-assisted extraction of simple phenolic compounds from grape skins and seeds. Agronomy, 11(8). https://doi.org/10.3390/agronomy11081527

Baiano, A. (2014). Recovery of Biomolecules from FoodWastes—A Review. *Molecules*, 19, 14821–14842.

Balasundrama, N., Sundramb, K., Sammana, S. (2006). Phenolic compounds in plants and agri-industrial by-products: Antioxidant activity, occurrence, and potential uses. *Food Chemistry.* 99:191–203.

Baljeet, S. Y., Ritika, B. Y., & Reena, K. (2014). Effect of incorporation of carrot pomace powder and germinated chickpea flour on the quality

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

characteristics of biscuits. International Food Research Journal, 21(1), 217–222.

Barbosa-Cánovas, G. V, Fontana, A. J., Schmidt, S. J., Labuza, T. P., & Bell, L. N. (2020). Moisture Effects on Food's Chemical Stability.

Barden, L., & Decker, E. A. (2013). Lipid oxidation in low-moisture food: A review. In Critical Reviews in Food Science and Nutrition (Vol. 56, Issue 15, pp. 2467–2482). Taylor and Francis Inc. https://doi.org/10.1080/10408398.2013.848833

Becker, F. S., Damiani, C., de Melo, A. A. M., Borges, P. R. S., & de Barros Vilas Boas, E. V. (2014). Incorporation of Buriti Endocarp Flour in Gluten-free Whole Cookies as Potential Source of Dietary Fiber. Plant Foods for Human Nutrition, 69(4), 344–350. https://doi.org/10.1007/S11130-014-0440-Y

Ben Jeddou, K., Bouaziz, F., Zouari-Ellouzi, S., Chaari, F., Ellouz-Chaabouni, S., Ellouz-Ghorbel, R., & Nouri-Ellouz, O. (2017). Improvement of texture and sensory properties of cakes by addition of potato peel powder with high level of dietary fiber and protein. Food Chemistry, 217, 668-677. http://dx.doi.org/10.1016/j.foodchem.2016.08.081. PMid:27664685.

Bledzki, A. K., Mamun, A. A., & Volk, J. (2010). Barley husk and coconut shell reinforced polypropylene composites: The effect of fibre physical, chemical and surface properties. Composites Science and Technology, 70(5), 840–846. https://doi.org/10.1016/j.compscitech.2010.01.022

Bo, J., & Muyiwa A. (2019). Effects of Alkaloids of Cocos nucifera Husk Fibre on Cardiovasular Disease Indices in Albino Mice. https://doi.org/10.35248/2329-6607.19.8.253

Boshir Ahmed, M., Kumer, A., Nazrul Islam, M., & Islam, T. S. A. (2018). The photochemical degradation (PCD) of nitrobenzene (NB) using UV light and fenton reagent under various conditions. Journal of the Turkish Chemical Society, Section A: Chemistry, 5(2), 803–818. https://doi.org/10.18596/jotcsa.364152

Boulekbache-makhlouf, L., Medouni, L., Medouni-adrar, S., Arkoub, L., & Madani, K. (2013). Effect of solvents extraction on phenolic content and antioxidant activity of the byproduct of eggplant. Industrial Crops & Products, 49, 668–674. https://doi.org/10.1016/j.indcrop.2013.06.009

Brand-Williams, W., Cuvelier, M. E., & Berset, C. (1995). Use of a Free Radical Method to Evaluate Antioxidant Activity. Lebensmittel-Wissenschaft Und-Technologie, 28, 25–30.

Brewer, M.S. (2011). Natural Antioxidant: Source, Compounds, Mechanisms of Action, and Potential Application. Comprehensive Reviews. *Food Science and Food Safety* 10: 221-247.

Buamard, N., & Benjakul, S. (2015). Improvement of gel properties of sardine (Sardinella albella) surimi using coconut husk extracts. 51, 146–155.

Cabral, M. M. S., Abud, A. K. de S., Silva, C. E. de F., & Almeida, R. M. R. G. (2016). Bioethanol production from coconut husk fiber. Ciência Rural, 46(10), 1872–1877. https://doi.org/10.1590/0103-8478CR20151331

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Canciam, C. A., & Pereira, N. C. (2019). Assessment of the use of epicarp and mesocarp of green coconut for removal of fluoride ions in aqueous solution. International Journal of Chemical Engineering, 2019. https://doi.org/10.1155/2019/7163812

Cardenas, A.F.C., Jurado, M.A.B. & Mora, O.O. (2014). Development of biscuit made from potato flour variety parda pastusa (Solanum tuberosum L.). *Acta Agronomica*, 63, 104–112.

Castaldo, L., Lombardi, S., Gaspari, A., Rubino, M., Izzo, L., Narváez, A., Ritieni, A., & Grosso, M. (2021). In vitro bioaccessibility and antioxidant activity of polyphenolic compounds from spent coffee grounds-enriched cookies. Foods, 10(8), 1837. https://doi.org/10.3390/FOODS10081837/S1

Castelluccio, C., Paganga, G., Melikian, N., Bolwell, G.P., Pridham, J., Sampson, J., Rice-Evans, C. (1995). Antioxidant potential of intermediates in phenylpropanoid metabolism in higher plants. *FEBS Lett*. 368 :188–192.

Chakraborty, M., & Mitra, A. (2008). The antioxidant and antimicrobial properties of the methanolic extract from Cocos nucifera mesocarp. Food Chemistry, 107, 994–999. https://doi.org/10.1016/j.foodchem.2007.08.083

Channaiah, L. H., Michael, M., Acuff, J. C., Phebus, R. K., Thippareddi, H., & Milliken, G. (2021). Thermal inactivation of Salmonella during hard and soft cookies baking process. Food Microbiology, 100. https://doi.org/10.1016/j.fm.2021.103874

Chauhan, A., Saxena, D. C., & Singh, S. (2016). Physical, textural, and sensory characteristics of wheat and amaranth flour blend cookies. Cogent Food & Agriculture, 2(1). https://doi.org/10.1080/23311932.2015.1125773

Chemat, F., Abert Vian, M., Fabiano-Tixier, A. S., Nutrizio, M., Režek Jambrak, A., Munekata, P. E. S., Lorenzo, J. M., Barba, F. J., Binello, A., & Cravotto, G. (2020). A review of sustainable and intensified techniques for extraction of food and natural products. Green Chemistry, 22(8), 2325–2353. https://doi.org/10.1039/c9gc03878g

Chemat, F., Rombaut, N., Sicaire, A., Meullemiestre, A., & Abert-vian, M. (2017). Ultrasound assisted extraction of food and natural products. Mechanisms, techniques, combinations, protocols and applications. A review. Ultrasonics - Sonochemistry, 34, 540–560. https://doi.org/10.1016/j.ultsonch.2016.06.035

Cheng, Y., Xu, Q., Liu, J., Zhao, C., Xue, F., & Zhao, Y. (2014). Decomposition of five phenolic compounds in high temperature water. Journal of the Brazilian Chemical Society, 25(11), 2102–2107. https://doi.org/10.5935/0103-5053.20140201

Christodoulou, M. C., Orellana Palacios, J. C., Hesami, G., Jafarzadeh, S., Lorenzo, J. M., Domínguez, R., Moreno, A., & Hadidi, M. (2022). Spectrophotometric Methods for Measurement of Antioxidant Activity in Food and Pharmaceuticals. In Antioxidants (Vol. 11, Issue 11). MDPI. https://doi.org/10.3390/antiox11112213

Chumroenvidhayakul, S., Thilavech, T., Abeywardena, M., & Adisakwattana, S. (2023). Dragon Fruit Peel Waste (Hylocereus undatus) as a Potential Ingredient for Reducing Lipid Peroxidation, Dietary Advanced Glycation

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
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Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

End Products, and Starch Digestibility in Cookies. Antioxidants, 12(5). https://doi.org/10.3390/antiox12051002

Cosme, F., Pinto, T., Vilela, A. (2018). Phenolic Compounds and Antioxidant Activity in Grape Juices: A Chemical and Sensory View. *Beverages*, 4, 22.

das Chagas, E. G. L., Vanin, F. M., dos Santos Garcia, V. A., Yoshida, C. M. P., & de Carvalho, R. A. (2021). Enrichment of antioxidants compounds in cookies produced with camu-camu (Myrciaria dubia) coproducts powders. LWT, 137, 110472. https://doi.org/10.1016/J.LWT.2020.110472

Das, R. R., Rahman, M. A., Al-Araby, S. Q., Islam, M. S., Rashid, M. M., Babteen, N. A., Alnajeebi, A. M., Alharbi, H. F. H., Jeandet, P., Rafi, M. K. J., Siddique, T. A., Uddin, M. N., & Zakaria, Z. A. (2021). The Antioxidative Role of Natural Compounds from a Green Coconut Mesocarp Undeniably Contributes to Control Diabetic Complications as Evidenced by the Associated Genes and Biochemical Indexes. Oxidative Medicine and Cellular Longevity, 2021. https://doi.org/10.1155/2021/9711176

de Carvalho Silva, N., Krysllen do Carmo Barros, E., Lúcia Fernandes Pereira, A., de Oliveira Lemos, T., & Kelly Gonçalves Abreu, V. (2019). Effect of Babassu (Orbignya phalerata) Mesocarp Flour on the Sensorial Properties and Nutritional Value of Cookies. Journal of Food and Nutrition Research, 7(11), 805–809. https://doi.org/10.12691/jfnr-7-11-8

De Falco, B., Grauso, L., Fiore, A., Bonanomi, G., Lanzotti, V. (2022) Metabolomics and Chemometrics of Seven Aromatic Plants: Carob, Eucalyptus, Laurel, Mint, Myrtle, Rosemary and Strawberry Tree. *Phytochem. Anal.* 33, 696–709.

DebMandal, M., & Mandal, S. (2011). Coconut (Cocos nucifera L.: Arecaceae): In health promotion and disease prevention. Asian Pacific Journal of Tropical Medicine, 4(3), 241–247. https://doi.org/10.1016/S1995-7645(11)60078-3

Del Rio D, Rodriguez-Mateos A, Spencer JP, Tognolini M, Borges G, Crozier A. (2013). Dietary (poly)phenolics in human health: structures, bioavailability, and evidence of protective effects against chronic diseases. *Antioxid Redox Signal*. 18(14):1818-92. doi: 10.1089/ars.2012.4581.

del Río, J. C., Rencoret, J., Gutiérrez, A., Kim, H., & John, R. (2017). Hydroxystilbenes are Monomers in Palm Fruit Endocarp Lignins. Plant Physiology, 174(4), 2072–2082. https://doi.org/10.1104/pp.17.00362

Derakhshan, Z., Ferrante, M., Tadi, M., Ansari, F., Heydari, A., Sadat, M., Oliveri, G., & Khalili, E. (2018). Antioxidant activity and total phenolic content of ethanolic extract of pomegranate peels, juice and seeds. Food and Chemical Toxicology, 114(January), 108–111. https://doi.org/10.1016/j.fct.2018.02.023

Deutch, C.E. (2018). Browning in apples: exploring the biochemical basis of an easily- observable phenotype. *Biochem. Mol. Biol. Educ*. 46, 76–82. https://doi.org/ 10.1002/bmb.21083.

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Dey, G., Sachan, A., Ghosh, S., & Mitra, A. (2003). Detection of major phenolic acids from dried mesocarpic husk of mature coconut by thin layer chromatography. Industrial Crops and Products, 18, 171–176. https://doi.org/10.1016/S0926-6690(03)00056-6

Dhingra, D., Michael, M., Rajput, H., & Patil, R. T. (2012). Dietary fibre in foods: a review. Journal of Food Science and Technology, 49(3), 255-266. http://dx.doi.org/10.1007/s13197-011-0365-5. PMid:23729846.

Durackova, Z. (2008). *Oxidants, Antioxidants and Oxidative Stress*. in: Anna Gvozdjakova (Ed.) *Mitochondrial Medicine: Mitocondrial Metabolisme, Diseases, Diagnosis and Therapy*. Springer-Verlag New York, LLC.

Dzah, C. S., Duan, Y., Zhang, H., Wen, C., Zhang, J., Chen, G., & Ma, H. (2020). The effects of ultrasound assisted extraction on yield, antioxidant, anticancer and antimicrobial activity of polyphenol extracts: A review. Food Bioscience, 35.

Działo M, Mierziak J, Korzun U, Preisner M, Szopa J, Kulma A. (2016). The Potential of Plant Phenolics in Prevention and Therapy of Skin Disorders. *Int J Mol Sci*. 17(2):160. doi: 10.3390/ijms17020160.

Dziki, D., Lisiecka, K., Gawlik-Dziki, U., Różyło, R., Krajewska, A., & Cacak-Pietrzak, G. (2022). Shortbread Cookies Enriched with Micronized Oat Husk: Physicochemical and Sensory Properties. Applied Sciences (Switzerland), 12(24). https://doi.org/10.3390/app122412512

Elsbaey, M., & Abdel, B. F. (2017). Coconut Waste as a Potential Source for Cytotoxic and Antioxidant Compounds. International Journal of Pharmacognosy and Phytochemical Research, 9(10), 1288–1292. https://doi.org/10.25258/phyto.v9i10.10451

Elsbaey, M., Jie, B., Tanaka, C., Kato, H., Tsukamoto, S., Usui, K., Hirai, G., & Miyamoto, T. (2019). Nuciferols A and B: Novel sesquineolignans from Cocos nucifera. Tetrahedron Letters, 60(33), 150948. https://doi.org/10.1016/j.tetlet.2019.150948

Emojevwe, V. (2012). Hypoglycaemic Effects of Cocos Nucifera (Coconut) Husk Extract On Alloxan Induced Female Diabetic Wistar Rats. Continental Journal Medical Research, 6(2), 5–10. https://doi.org/10.5707/cjmedres.2012.6.2.5.10

Emojevwe, V. (2013). Cocos nucifera (Coconut) Fruit: A review of its medical properties. Advances in Agriculture, Sciences and Engineering Research, 3(3), 718–723. https://doi.org/10.13140/RG.2.2.21506.53446

Espada-bellido, E., Ferreiro-González, M., Carrera, C., Palma, M., Barroso, C. G., & Barbero, G. F. (2017). Optimization of the ultrasound-assisted extraction of anthocyanins and total phenolic compounds in mulberry (Morus nigra) pulp. Food Chemistry, 219, 23–32. https://doi.org/10.1016/j.foodchem.2016.09.122

Esquenazi, D., Wigg, M. D., Miranda, M. M. F. S., Rodrigues, H. M., Tostes, J. B. F., Rozental, S., Antonio, J. R., & Alviano, C. S. (2002). Antimicrobial and antiviral activities of polyphenolics from Cocos nucifera Linn. (Palmae) husk fiber extract. Research in Microbiology, 153, 647–652.

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

European Union (EU). Closing the Loop—An EU Action Plan for the Circular Economy. 2015. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614 (accessed on 20 September 2023).

Falowo, A. B., Fayemi, P. O., & Muchenje, V. (2014). Natural antioxidants against lipid – protein oxidative deterioration in meat and meat products: A review. 64, 171–181.

FAOSTAT. (n.d.-a). Retrieved October 27, 2022, from https://www.fao.org/faostat/en/#data/QCL

FAOSTAT. (n.d.-b). No Title. Retrieved March 31, 2022, from https://www.fao.org/faostat/en/#data/QCL

Felli, R., Yang, T. A., Wan Abdullah, W. N., & Zzaman, W. (2018). Effects of incorporation of jackfruit rind powder on chemical and functional properties of bread. Tropical Life Sciences Research, 29(1), 113-126. http://dx.doi.org/10.21315/tlsr2018.29.1.8. PMid:29644019.

Food and Agriculture Organization of the United Nations (FAO). Global Food Losses and Food Waste. Available online: https://www.fao.org/3/mb060e/mb060e00.htm (accessed on 20 September 2023).

Food and Drug Administration. (2013). FDA (2013) Code of Federal Regulations.

Gagneten, M., Archaina, D. A., Salas, M. P., Leiva, G. E., Salvatori, D. M., & Schebor, C. (2021). Gluten-free cookies added with fibre and bioactive compounds from blackcurrant residue. International Journal of Food Science and Technology, 56(4), 1734–1740. https://doi.org/10.1111/ijfs.14798

Gao, Y., Cao, Q. Q., Chen, Y. H., Granato, D., Wang, J. Q., Yin, J. F., Zhang, X. B., Wang, F., Chen, J. X., & Xu, Y. Q. (2022). Effects of the Baking Process on the Chemical Composition, Sensory Quality, and Bioactivity of Tieguanyin Oolong Tea. Frontiers in Nutrition, 9. https://doi.org/10.3389/fnut.2022.881865

Gebreselassie, E., & Clifford, H. (2016). Oxidative Stability and Shelf Life of Crackers, Cookies, and Biscuits. Oxidative Stability and Shelf Life of Foods Containing Oils and Fats, 461–478. https://doi.org/10.1016/B978-1-63067-056-6.00012-4

Ghasemzadeh, A., Ghasemzadeh, N. (2011). Flavonoids and phenolic acids: Role and biochemical activity in plants and human. *Journal of Medicine Plants*, 5 : 6697–6703.

Ghotra, B.S., Dyal, S.D. & Narine, S.S. (2002). Lipid shortenings: a review. *Food Research International*, 35, 1015–1048.

Giuberti, G., Rocchetti, G., Sigolo, S., Fortunati, P., Lucini, L., & Gallo, A. (2018). Exploitation of alfalfa seed (Medicago sativa L.) flour into gluten-free rice cookies: Nutritional, antioxidant and quality characteristics. Food Chemistry, 239, 679–687. https://doi.org/10.1016/j.foodchem.2017.07.004

Goff, H. D., & Guo, Q. (2019). Chapter 1: The Role of Hydrocolloids in the Development of Food Structure. Food Chemistry, Function and Analysis, 2020-January (18), 1–28. https://doi.org/10.1039/9781788016155-00001

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GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Goldsmith, C. D., Vuong, Q. V, Stathopoulos, C. E., Roach, P. D., & Scarlett, C. J. (2018). Ultrasound increases the aqueous extraction of phenolic compounds with high antioxidant activity from olive pomace. LWT - Food Science and Technology, 89(June 2017), 284–290. https://doi.org/10.1016/j.lwt.2017.10.065

Goodrich, J., Carpenter, R., Coen, E.S., Lane, C., (1991). A common gene regulates pigmentation pattern in diverse plant species. Cell 68, 955–964.

Gordon M.H. (2001). Antioxidants in Food. Woodhead Publishing; Sawston, UK.

Guadalupe, M., Ramírez, L., Guillermo, H., Ruiz, O., Navarro, F., Alejandra, M., Gallegos, C., & García Enriquez, S. (2012). Evaluation Of Fungi Toxic Activity Of Tannins And A Tannin-Copper Complex From The Mesocarp Of Cocos Nucifera Linn. Wood and Fiber Science, 44(4), 357–364.

Gulcin, İ. (2020). Antioxidants and Antioxidant Methods: An Updated Overview. *Arch. Toxicol.* 94, 651–715.

Hadidi, M., Rostamabadi, H., Moreno, A., Jafari, S.M. (2022). Nanoencapsulation of Essential Oils from Industrial Hemp (*Cannabis Sativa* L.) by-Products into Alfalfa Protein Nanoparticles. *Food Chem.*, 386, 132765.

Hadnadev, M., Doki, L., Hadnadev, T. D., Pajin, B. & Krstono, V. (2011). The impact of maltodextrin-based fat mimetics on rheological and textural characteristics of edible vegetable fat. *Journal of Texture Studies*, 42, 404–411.

Harish, T., Bhuvaneshwari, G., Jagadeesh, S. L., & Terdal, D. (2022). Development of Cookies Incorporated with Pomegranate Seed Powder and Defatted Soybean Flour. International Journal of Fruit Science, 22(1), 504–513. https://doi.org/10.1080/15538362.2022.2066044

Hassan, R. M., Fhadhila, A., Kawasaki, N., & Hassan, N. A. (2018). Antioxidant Activity of Natural Pigment from Husk of Coconut. Tropical Agricultural Science, 41(1), 441–452.

Hassan, R. M., Hassan, N. A., Fhadhila, A., & Yusoff, A. M. (2018). Ultrasound-assisted extraction of natural colourant from husk of Cocos nucifera: A comparison with agitated-bed extraction. Pertanika Journal of Science and Technology, 26, 1039–1052. https://www.researchgate.net/publication/326983431

He, J., Zhu, Q., Dong, X., Pan, H., Chen, J., Zheng, Z.P. (2017). Oxyresveratrol and ascorbic acid O/W microemulsion: Preparation, characterization, anti-isomerization and potential application as antibrowning agent on fresh-cut lotus root slices. *Food Chem*, 214, 269–276.

Heenataj, B., Kushmitha, V., Babu, N. G. R., & Seethalakshmi, I. (2017). Antioxidants and Cytotoxicity Analysis of Coconut Husk Extract. International Journal of Engineering Research and Management (IJERM), 4(08), 5–9.

Hegazy, E. M., Ibrahim, N. M., & Saleh, N. S. M. (2020). Determination of antioxidant and antifungal activities in cookies fortified with solar dried prickly pear peels powder. Pakistan Journal of Biological Sciences, 23(5), 590–601. https://doi.org/10.3923/pjbs.2020.590.601

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Hikmawanti, N. P. E., Wiyati, T., Abdul Muis, M., Nurfaizah, F. A., & Septiani, W. (2021). Total Flavonoids Content of Polar Extracts of Cayratia trifolia Leaves. IOP Conference Series: Earth and Environmental Science, 819(1). https://doi.org/10.1088/1755-1315/819/1/012056

Im, C. Y., Kim, M. H., & Kang, W. W. (2017). Quality characteristics of cookies added with Takju pomace powder. Korean Journal of Food Preservation, 24(1), 8–12. https://doi.org/10.11002/kjfp.2017.24.1.8

Ismail, B. B., Guo, M., Pu, Y., Wang, W., & Ye, X. (2018). Valorization of baobab (Adansonia digitata) seeds by ultrasound assisted extraction of polyphenolics. Optimization and comparison with conventional methods. Ultrasonics - Sonochemistry, November, 0–1. https://doi.org/10.1016/j.ultsonch.2018.11.023

Ismail, T., Akhtar, S., Riaz, M., & Ismail, A. (2014). Effect of pomegranate peel supplementation on nutritional, organoleptic and stability properties of cookies. International Journal of Food Sciences and Nutrition, 65(6), 661–666. https://doi.org/10.3109/09637486.2014.908170

Ismail, T., Akhtar, S., Riaz, M., Hameed, A., Afzal, K., & Sattar Sheikh, A. (2016). Oxidative and Microbial Stability of Pomegranate Peel Extracts and Bagasse Supplemented Cookies. Journal of Food Quality, 39(6), 658–668. https://doi.org/10.1111/jfq.12231

Jaouhari, Y., Travaglia, F., Giovannelli, L., Picco, A., Oz, E., Oz, F., & Bordiga, M. (2023). From Industrial Food Waste to Bioactive Ingredients: A Review on the Sustainable Management and Transformation of Plant-Derived Food Waste. Foods, 12(11). https://doi.org/10.3390/foods12112183

Javier Cortés-Rivera, H., Javier Blancas-Benitez, F., del Carmen Romero-Islas, L., Gutiérrez-Martinez, P., & Ramón González-Estrada, R. (2019). In vitro evaluation of residues of coconut (Cocos nucifera L.) aqueous extracts, against the fungus Penicillium italicum. Emir. J. Food Agric •, 31. http://www.ejfa.me/

Jayaprakasha, G. K., & Rao, L. J. (2000). Phenolic Constituents from Lichen Parmotrema stuppeum (Nyl.) Hale and Their Antioxidant Activity.

Jeong, I. J., & Kim, K. J. (2009). An interactive desirability function method to multiresponse optimization. European Journal of Operational Research, 195(2), 412–426. https://doi.org/10.1016/j.ejor.2008.02.018

Jiménez-Morales, K., Castañeda-Pérez, E., Herrera-Pool, E., Ayora-Talavera, T., Cuevas-Bernardino, J. C., García-Cruz, U., Pech-Cohuo, S. C., & Pacheco, N. (2022). Ultrasound-Assisted Extraction of Phenolic Compounds from Different Maturity Stages and Fruit Parts of Cordia dodecandra A. DC.: Quantification and Identification by UPLC-DAD-ESI-MS/MS. Agriculture (Switzerland), 12(12). https://doi.org/10.3390/agriculture12122127

Johar, M. F., & Ariff, T. F. (2022). Mechanical and Microstructural Properties of Hybrid Bio-Composites using Microwaved Coconut Fibre and Rice Husk. Journal of Physics: Conference Series, 2199(1). https://doi.org/10.1088/1742-6596/2199/1/012015

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Jose, M., Himashree, P., Sengar, A. S., & Sunil, C. K. (2022). Valorization of food industry by-product (Pineapple Pomace): A study to evaluate its effect on physicochemical and textural properties of developed cookies. Measurement: Food, 6, 100031. https://doi.org/10.1016/j.meafoo.2022.100031

Kakkar, S., & Bais, S. (2014). A Review on Protocatechuic Acid and Its Pharmacological Potential. ISRN Pharmacology, 2014, 1–9. https://doi.org/10.1155/2014/952943

Kalina, S., & Navaratne, S. B. (2019). Analysis of Antioxidant Activity and Texture Profile of Tender-Young and King Coconut (Cocos nucifera) Mesocarps under Different Treatments and the Possibility to Develop a Food Product. International Journal of Food Science, 1, 1–7.

Kedare, S.B., Singh, R., (2011). Genesis and development of DPPH method of antioxidant assay. *J. Food Sci. Technol*. 48 (4), 412–422.

Kibria, A. A., Kamrunnessa, & Rahman, M. Md. (2018). Extraction And Evaluation Of Phytochemicals From Green Coconut (Cocos Nucifera) Shell. Malaysian Journal of Halal Research (MJHR), 1(2), 19–22.

Kim, J. M., Kang, J. Y., Park, S. K., Han, H. J., Lee, K. Y., Kim, A. N., Kim, J. C., Choi, S. G., & Heo, H. J. (2020). Effect of storage temperature on the antioxidant activity and catechins stability of Matcha (Camellia sinensis). Food Science and Biotechnology, 29(9), 1261–1271. https://doi.org/10.1007/s10068-020-00772-0

Kruczek, M., Gumul, D., Korus, A., Buksa, K., & Ziobro, R. (2023). Phenolic Compounds and Antioxidant Status of Cookies Supplemented with Apple Pomace. Antioxidants, 12(2). https://doi.org/10.3390/antiox12020324

Kuchtová, V., Kohajdová, Z., Karovičová, J., & Lauková, M. (2018). Physical, Textural and Sensory Properties of Cookies Incorporated with Grape Skin and Seed Preparations. Polish Journal of Food and Nutrition Sciences, 68(4), 309–317. https://doi.org/10.2478/pjfns-2018-0004

Kumar, K., Srivastav, S., & Sharanagat, V. S. (2021). Ultrasound assisted extraction (UAE) of bioactive compounds from fruit and vegetable processing by-products: A review. Ultrasonics-Sonochemistry.

Kumari, N., Sindhu, S. C., Rani, V., & Kumari, V. (2021). Shelf-Life Evaluation of Biscuits and Cookies Incorporating Germinated Pumpkin Seed Flour. International Journal of Current Microbiology and Applied Sciences, 10(01), 1436–1443. https://doi.org/10.20546/ijcmas.2021.1001.170

Laguerre M, Lecomte J, Villeneuve P. (2007). Evaluation of the ability of antioxidants to counteract lipid oxidation: existing methods, new trends and challenges. *Prog Lipid Res*,m46(5):244-82. doi: 10.1016/j.plipres.2007.05.002.

Le Floch, A., Jourdes, M., Teissedre, P.L. (2015). Polysaccharides and lignin from oak wood used in cooperage: Composition, interest, assays: A review. *Carbohydrate Research*. 417: 94–102

Leliana, L., Setyaningsih, W., Palma, M., Supriyadi, & Santoso, U. (2022b). Antioxidant Activity of Aqueous and Ethanolic Extracts of Coconut

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

(Cocos nucifera) Fruit By-Products. Agronomy, 12(5), 1102. https://doi.org/10.3390/agronomy12051102

Leliana, L., Setyaningsih, W., Palma, M., Supriyadi, S., & Santoso, U. (2022a). Optimization of Ultrasound-Assisted Extraction from Young Coconut Mesocarp in the Rapid Extraction of Phenolic Compounds and Antioxidant Activity. Agronomy, 12(11), 2798. https://doi.org/10.3390/agronomy12112798

Leopoldini, M., Russo, N., & Toscano, M. (2011). The molecular basis of working mechanism of natural polyphenolic antioxidants. Food Chemistry, 125(2), 288–306. https://doi.org/10.1016/j.foodchem.2010.08.012

Lima, E. B. C., Sousa, C. N. S., Meneses, L. N., Ximenes, N. C., & Júnior, M. A. S. (2015). Cocos nucifera L. (Arecaceae): A phytochemical and pharmacological review. 48, 953–964.

M.M. Doweidar, M., & Mohamed El-Said, N. (2011). Production of Crackers Supplemented with Prickly Pear Fruit Components (Opuntia Ficus-Indica L.). Egyptian Journal of Applied Science, 3(26), 63–85. https://doi.org/10.13140/RG.2.2.35300.50569

Mai, T. H. A., Tran, T. T. T., & Le, V. V. M. (2023). Effects of Pitaya Peel Supplementation on Nutritional Quality, Overall Sensory Acceptance, In Vitro Glycemic Index, and Antioxidant Release from Fiber-Enriched Cookies. Journal of Food Quality, 1–10. https://doi.org/10.21203/rs.3.rs-2322871/v1

Majidiyan, N., Hadidi, M., Azadikhah, D., Moreno, A. (2022). Protein Complex Nanoparticles Reinforced with Industrial Hemp Essential Oil: Characterization and Application for Shelf-Life Extension of Rainbow Trout Fillets. *Food Chem. X*, *13*, 100202.

Manach, C., Scalbert, A., Morand, C., Remesy, C., Jimenez, L. (2004). Polyphenols: Food sources and bioavailability. *American Journal Clinical. Nutrition*. 79:727–747.

Maskey, B., Subedi, S., & Shrestha, N. K. (2020). Effect of Incorporation of Jackfruit (Artocarpus heterophyllus) Seed Flour on the Quality of Cookies. Dristikon: A Multidisciplinary Journal, 10(1), 60–72. https://doi.org/10.3126/dristikon.v10i1.34541

Maurya, D. K., & Devasagayam, T. P. A. (2010). Antioxidant and prooxidant nature of hydroxycinnamic acid derivatives ferulic and caffeic acids. Food and Chemical Toxicology, 48(12), 3369–3373. https://doi.org/10.1016/j.fct.2010.09.006

Mildner-Szkudlarz, S., Bajerska, J., Zawirska-Wojtasiak, R., & Górecka, D. (2013). White grape pomace as a source of dietary fibre and polyphenols and its effect on physical and nutraceutical characteristics of wheat biscuits. Journal of the Science of Food and Agriculture, 93(2), 389–395. https://doi.org/10.1002/JSFA.5774

Moon, J.K., Shibamoto, T. (2004). Antioxidant Assays for Plant and Food Components. *J. Agric. Food Chem.* 57, 1655–1666

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Morbeck, F. L., Lelis, R. C. C., Schueler, M. V. E., Santos, W. A., Sampaio, D. A., Silva, B. C., Morais, R. de M., & Santana, G. M. (2019). Extraction and evaluation of tannin of coconut mesocarp. Revista Materia, 24(3).

Msaddak, L., Siala, R., Fakhfakh, N., Ayadi, M. A., Nasri, M., & Zouari, N. (2015). Cladodes from prickly pear as a functional ingredient: Effect on fat retention, oxidative stability, nutritional and sensory properties of cookies. International Journal of Food Sciences and Nutrition, 66(8), 851–857. https://doi.org/10.3109/09637486.2015.1095862

Mudgil, D., & Barak, S. (2013). Composition, properties and health benefits of indigestible carbohydrate polymers as dietary fiber: a review. International Journal of Biological Macromolecules, 61, 1-6. http://dx.doi.org/10.1016/j.ijbiomac.2013.06.044. PMid:23831534.

Muflihah, Y. M., Gollavelli, G., & Ling, Y.-C. (2021). Correlation Study of Antioxidant Activity with Phenolic and Flavonoid Compounds in 12 Indonesian Indigenous Herbs. Antioxidants, 10(10), 1530. https://doi.org/10.3390/antiox10101530

Munteanu, I.G.; Apetrei, C. (2021). Analytical Methods Used in Determining Antioxidant Activity: A Review. *Int. J. Mol. Sci.,* 22,3380.

Muritala, H. F., Akolade, J. O., Akande, S. A., Abdulazeez, T. A., Aladodo, R. A., & Bello, B. A. (2018). Antioxidant and alpha- ¬ amylase inhibitory potentials of Cocos nucifera husk. Food Science and Nutrition, June. https://doi.org/10.1002/fsn3.741

Naik, A. S., Suryawanshi, D., Kumar, M., & Waghmare, R. (2021). Ultrasonic treatment: A cohort review on bioactive compounds, allergens and physico-chemical properties of food. In Current Research in Food Science (Vol. 4, pp. 470–477). Elsevier B.V. https://doi.org/10.1016/j.crfs.2021.07.003

Naik, B., Kumar, V., & Gupta, A. K. (2023). Valorization of tender coconut mesocarp for the formulation of ready-to-eat dairy-based dessert (Kheer): Utilization of industrial by-product. Journal of Agriculture and Food Research, 12. https://doi.org/10.1016/j.jafr.2023.100572

Najjar, Z., Alkaabi, M., Alketbi, K., Stathopoulos, C., & Ranasinghe, M. (2022a). Physical Chemical and Textural Characteristics and Sensory Evaluation of Cookies Formulated with Date Seed Powder. Foods, 11(3). https://doi.org/10.3390/foods11030305

Najjar, Z., Kizhakkayil, J., Shakoor, H., Platat, C., Stathopoulos, C., & Ranasinghe, M. (2022a). Antioxidant Potential of Cookies Formulated with Date Seed Powder. Foods 2022, Vol. 11, Page 448, 11(3), 448. https://doi.org/10.3390/FOODS11030448

Nakov, G., Brandolini, A., Hidalgo, A., Ivanova, N., Jukić, M., Komlenić, D. K., & Lukinac, J. (2020a). Influence of apple peel powder addition on the physico-chemical characteristics and nutritional quality of bread wheat cookies. Food Science and Technology International, 26(7), 574–582. https://doi.org/10.1177/1082013220917282

Namal Senanayake, S. P. J. (2013). Green tea extract: Chemistry, antioxidant properties and food applications - A review. In Journal of Functional

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Foods (Vol. 5, Issue 4, pp. 1529–1541). https://doi.org/10.1016/j.jff.2013.08.011

Naris, S. (2022). Brief Note on Antioxidant Compounds in Eggs. Oxidants and Antioxidants in Medical Science, 11(5), 1.

Natukunda, S., Muyonga, J. H., & Mukisa, I. M. (2016). Effect of tamarind (Tamarindus indica L.) seed on antioxidant activity, phytocompounds, physicochemical characteristics, and sensory acceptability of enriched cookies and mango juice. Food Science and Nutrition, 4(4), 494–507. https://doi.org/10.1002/fsn3.311

Nawar, W.F. (1996). Lipids. in: Fennema, O (Ed.). *Food chemistry*. 3rd ed., p. 225-320. Marcel Dekker, Inc., NY.

Nerdy, N., Manurung, K. (2018). Spectrophotometric Method for Antioxidant Activity Test and Total Phenolic Determination of Red Dragon Fruit Leaves and White Dragon Fruit Leaves. *Rasayan J. Chem.*, 11, 1183–1192. [CrossRef]

Nguyen, T. M. C., Gavahian, M., & Tsai, P. J. (2021). Ultrasound-assisted extraction of Gac (Momordica cochinchinensis Spreng.) leaves: Effect of maturity stage on phytochemicals and carbohydrate-hydrolyzing enzymes inhibitory activity. Italian Journal of Food Science, 33, 34–42. https://doi.org/10.15586/ijfs.v33iSP1.1987

Nikhontha, K., Krisanapook, K., & Imsabai, W. (2019). Fruit Growth, Endocarp Lignification, Boron and Calcium Concentrations In Nam Hom (Aromatic) Coconut During Fruit Development. In J. ISSAAS (Vol. 25, Issue 1).

Nimse, S.B., Pal, D. (2015). Free Radicals, Natural Antioxidants, and Their Reaction Mechanisms. *RSC Adv.*, 5, 27986–28006. [CrossRef]

Okuda, T. (2005). Systematics and health effects of chemically distinct tannins in medicinal plants. *Phytochemistry*, 66: 2012–2031

Oladunjoye, A. O., Eziama, S. C., & Aderibigbe, O. R. (2021). Proximate composition, physical, sensory and microbial properties of wheat-hog plum bagasse composite cookies. LWT, 141. https://doi.org/10.1016/j.lwt.2021.111038

Oliveira, M. S. B. dos, Valentim, I. B., Vasconcelos, C. C. de, Omena, C. M. B., Bechara, E. J. H., Costa, J. G. da, Freitas, M. D. L., Sant'Ana, A. E. G., & Goulart, M. O. F. (2012). Cocos nucifera Linn. (Palmae) Husk Fiber Ethanolic Extract: Antioxidant Capacity and Electrochemical Investigation. Combinatorial Chemistry & High Throughput Screening, 16(1). https://doi.org/10.2174/1386207311316020006

Onyechi, O., Elijah, P., & Nkechi, J. (2010). Phytochemical Analysis of Cocos nucifera L. Journal of Pharmacy Research, 3(2), 280–286.

Pandey, A., Belwal, T., Sekar, K. C., Bhatt, I. D., & Rawal, R. S. (2018). Optimization of ultrasonic-assisted extraction (UAE) of phenolics and antioxidant compounds from rhizomes of Rheum moorcroftianum using response surface methodology (RSM). Industrial Crops & Products, 119(December 2017), 218–225. https://doi.org/10.1016/j.indcrop.2018.04.019

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Pareyt, B., Talhaoui, F., Kerckhofs, G., Brijs, K., Goesaert, H., Wevers, M., & Delcour, J. A. (2009). The role of sugar and fat in sugar-snap cookies: Structural and textural properties. Journal of Food Engineering, 90(3), 400–408. https://doi.org/10.1016/j.jfoodeng.2008.07.010

Pasandideh, S. H. R., & Niaki, S. T. A. (2006). Multi-response simulation optimization using genetic algorithm within desirability function framework. Applied Mathematics and Computation, 175(1), 366–382. https://doi.org/10.1016/j.amc.2005.07.023

Patil, S., Rao, B., Matondkar, M., Bhushette, P., & Sonawane, S. K. (2022). A Review On Understanding Of Egg Yolk As Functional Ingredients. Journal of Microbiology, Biotechnology and Food Sciences, 11(4). https://doi.org/10.55251/jmbfs.4627

Perera, C., Meegahakumbura, M. K., Dissanayaka, A. C., & Perera, L. (2014). Quantitative Characterization of Nut Yield and Fruit Components in Indigenous Coconut Germplasm in Sri Lanka. International Journal of Biodiversity, September. https://doi.org/10.1155/2014/740592

Perron, N. R., & Brumaghim, J. L. (2009). A review of the antioxidant mechanisms of polyphenol compounds related to iron binding. Cell Biochemistry and Biophysics, 53(2), 75–100.

Perron, N. R., Wang, H. C., DeGuire, S. N., Jenkins, M., Lawson, M., & Brumaghim, J. L. (2010). Kinetics of iron oxidation upon polyphenol binding. Dalton Transactions, 39(41), 9982–9987.

Prades, A., Dornier, M., Diop, N., & Pain, J. P. (2012). Coconut water uses, composition and properties: A review. In Fruits (Vol. 67, Issue 2, pp. 87–107). https://doi.org/10.1051/fruits/2012002

Prakash, A., Vadivel, V., Banu, S. F., Nithyanand, P., Lalitha, C., & Brindha, P. (2018). Evaluation of antioxidant and antimicrobial properties of solvent extracts of agro-food by-products (cashew nut shell, coconut shell and groundnut hull). Agriculture and Natural Resources, 52, 451–459.

Raharjo, S. (2006). Kerusakan Oksidatif Pada Makanan. Gadjah Mada University Press, Yogyakarta.

Rajiv, J., Indrani, D., Prabasankar, P., Rao, G., (2012). Rheology fatty acid profile and storage characteristics of cookies as influenced by flax seed (Linum usitatissimum). *Journal of Food Science and Technology*, 49 (5), 587-595.

Reddy, G.M., Rao, V., Sarma, D., Reddy, T.K., Subramanyam, P., Naidu, M.D., (2012). Evaluation of antioxidant activity index (AAI) by the 2, 2-diphenyl-1-picryl hydrazyl method of 40 medicinal plants. *J. Med. Plants Res*. 6 (24), 4082–4086.

Rhile, I. J., Markle, T. F., Nagao, H., DiPasquale, A. G., Lam, O. P., Lockwood, M. A., … Mayer, J. M. (2006). Concerted proton− electron transfer in the oxidation of hydrogen-bonded phenols. Journal of the American Chemical Society, 128(18), 6075–6088.

Ribeiro, J. S., José, M., Cordeiro, M., Kauly, L., Silva, R., Carla, L., Pereira, L., Alves, I., Caetano, S., & Viana, M. (2019). Natural antioxidants used in meat products: A brief review. 148(April 2018), 181–188.

UNIVERSITAS
GADJAH MADA
Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
Lulum Leliana, Prof. Dr. Ir. Umar Santoso, M.Sc.
Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

Rodrigues, S., & Pinto, G. A. S. (2007). Ultrasound extraction of phenolic compounds from coconut (*Cocos nucifera*) shell powder. 80, 869–872. https://doi.org/10.1016/j.jfoodeng.2006.08.009

Rodríguez García, S. L., & Raghavan, V. (2021). Green extraction techniques from fruit and vegetable waste to obtain bioactive compounds—A review. Critical Reviews in Food Science and Nutrition, 0(0), 1–21. https://doi.org/10.1080/10408398.2021.1901651

Sadeer, N.B., Montesano, D., Albrizio, S., Zengin, G., Mahomoodally, M.F. (2020). The Versatility of Antioxidant Assays in Food Science and Safety—Chemistry, Applications, Strengths, and Limitations. *Antioxidants*, 9, 709.

Sahai, Ms. M. (2018). Development of Vegetable Seeds Incorporated Cookies: Nutrient Composition, Functional Properties, Mineral Analysis and Sensory Evaluation. International Journal of Environment, Agriculture and Biotechnology, 3(3), 916–927. https://doi.org/10.22161/ijeab/3.3.26

Sánchez-Alonso, I., Careche, M., Moreno, P., González, M. J., & Medina, I. (2011). Testing caffeic acid as a natural antioxidant in functional fish-fibre restructured products. LWT-Food Science and Technology, 44(4), 1149–1155. https://doi.org/10.1016/j.lwt.2010.11.018

Santoso, U. 2016. Antioksidan Pangan.Gadjah Mada Press. Yogyakarta

Saxena, M., Saxena, J., Pradhan, A. (2012). Flavonoids and phenolic acids as antioxidants in plants and human health. International Journal Pharmacy Science Research, 16: 130–134

Setyamidjaja, D. 1984. Bertanam Kelapa. Penerbit Kanisius. Yogyakarta.

Setyaningsih, W., Saputro, I. E., Palma, M., & Barroso, C. G. (2016). Stability of 40 phenolic compounds during ultrasound-assisted extractions (UAE). AIP Conference Proceedings, 1755. https://doi.org/10.1063/1.4958517

Shahidi, F. dan Zhong, Y. (2005b). Antioxidants: Regulatory Status. Bailey' Industrial Oil and Fats Products. 6th ed. 6:257-285. John Wiley and Sons Inc, Canada.

Shahidi, F., dan Zhong, Y. (2005a). Lipid Oxidation: Measurement Methods. Bailey's Industrial Oil and Fats Products. 6th ed. 6:257-285. John Wiley and Sons Inc, Canada.

Sharma, O.P., Bhat, T.K. (2009). DPPH Antioxidant Assay Revisited. *Food Chem.*, 113, 1202–1205

Sharma, S. K., Bansal, S., Mangal, M., Dixit, A. K., Gupta, R. K., & Mangal, A. K. (2016). Utilization of food processing by-products as dietary, functional, and novel fiber: A review. Critical Reviews in Food Science and Nutrition, 56(10), 1647–1661. https://doi.org/10.1080/10408398.2013.794327

Silva, R. R., Oliveira, D., Fontes, H. R., Alviano, C. S., Fernandes, P. D., & Alviano, D. S. (2013). activities of Cocos nucifera var . typica.

Singla, R. K., Jaiswal, N., Bhat, V., & Jagani, H. (2011). Antioxidant & Antimicrobial Activities of Cocos Nucifera Linn . (Arecaceae) Endocarp Extracts. Indo Global Journal of Pharmaceutical Sciences, 4(January), 354–361.

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Sissons, M. J., Son, H. N., & Turner, M. A. (2007). Role of gluten and its components in influencing durum wheat dough properties and spaghetti cooking quality. Journal of the Science of Food and Agriculture, 87(10), 1874–1885. https://doi.org/10.1002/jsfa.2915

Solangi, A. H., & Iqbal, M. Z. (2011). Chemical Composition Of Meat (Kernel) And Nut Water Of Major Coconut (Cocos Nucifera L .) Cultivars At Coastal Area Of Pakistan. Pakistan Journal of Botany, 43(1), 357–363.

Sombie, P.A.E.D., Hilou, A., Mounier, C., Coulibaly, A.Y., Kiendrebeogo, M., Millogo, J.F., Nacoulma, O.G., (2011). Antioxidant and Anti-inflammatory Activities from Galls of Guiera senegalensis J.F. Gmel (Combretaceae). Research Journal of Medicinal Plants, 5: 448-461.

Spranger, I., Sun, B., Mateus, A. M., Freitas, V. de, & Ricardo-da-Silva, J. M. (2008). Chemical characterization and antioxidant activities of oligomeric and polymeric procyanidin fractions from grape seeds. Food Chemistry, 108(2), 519–532. https://doi.org/10.1016/j.foodchem.2007.11.004

Staško, A., Brezová, V., Biskupič, S., Mišík, V. (2007). The Potential Pitfalls of Using 1,1-Diphenyl-2-Picrylhydrazyl to Characterize Antioxidants in Mixed Water Solvents. *Free Radic. Res.*, 41, 379–390.

Subiria-Cueto, R., Coria-Oliveros, A. J., Wall-Medrano, A., Rodrigo-García, J., González-Aguilar, G. A., Martinez-Ruiz, N. D. R., & Alvarez-Parrilla, E. (2022). Antioxidant dietary fiber-based bakery products: a new alternative for using plant-by-products. In Food Science and Technology (Brazil) (Vol. 42). Sociedade Brasileira de Ciencia e Tecnologia de Alimentos, SBCTA. https://doi.org/10.1590/fst.57520

Suriya, M., Rajput, R., Reddy, C. K., Haripriya, S., & Bashir, M. (2017). Functional and physicochemical characteristics of cookies prepared from Amorphophallus paeoniifolius flour. Journal of Food Science and Technology, 54(7), 2156–2165. https://doi.org/10.1007/s13197-017-2656-y

Susanti, E. P., Rohman, A., & Setyaningsih, W. (2022). Dual Response Optimization of Ultrasound-Assisted Oil Extraction from Red Fruit (Pandanus conoideus): Recovery and Total Phenolic Compounds. Agronomy, 12(2). https://doi.org/10.3390/agronomy12020523

Tabaraki, R., Heidarizadi, E., & Benvidi, A. (2012). Optimization of ultrasonic-assisted extraction of pomegranate (Punica granatum L.) peel antioxidants by response surface methodology. Separation And Purification Technology, 98, 16–23. https://doi.org/10.1016/j.seppur.2012.06.038

Thebo, N. K., Simair, A. A., Mangrio, G. S., Ansari, K. A., Bhutto, A. A., Lu, C., & Sheikh, W. A. (2016). Antifungal Potential and Antioxidant Efficacy in the Shell Extract of Cocos nucifera (L.) (Arecaceae) against Phatogenic Dermal Mycosis. Medicines, 3(12), 1–12. https://doi.org/10.3390/medicines3020012

Toledo, N. M. V., Mondoni, J., Harada-Padermo, S. S., Vela-Paredes, R. S., Berni, P. R. A., Selani, M. M., & Canniatti-Brazaca, S. G. (2019). Characterization of apple, pineapple, and melon by-products and their application in cookie formulations as an alternative to enhance the

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Antioxidants Derived from Coconut Mesocarp at Two Different Stages of Maturity and Their Potential Application in Preventing Oxidation in Cookies
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Universitas Gadjah Mada, 2023 | Diunduh dari http://etd.repository.ugm.ac.id/

antioxidant capacity. Journal of Food Processing and Preservation, 43(9). https://doi.org/10.1111/JFPP.14100

Tyagi, P., Chauhan, A. K., & Singh, S. N. (2020). Sensory acceptability of value-added cookies incorporated with Tinospora cordifolia (TC) stem powder; improvement in nutritional properties and antioxidant potential. Journal of Food Science and Technology, 57(8), 2934–2940. https://doi.org/10.1007/s13197-020-04325-5

United Nation (UN). The 17 GOALS|Sustainable Development. Available online: https://sdgs.un.org/goals (accessed on 4 September 2023).

Usman, M., Ahmed, S., Mehmood, A., Bilal, M., Patil, P. J., Akram, K., & Farooq, U. (2020). The effect of apple pomace on nutrition, rheology of dough and cookies quality. Journal of Food Science and Technology, 57(9), 3244–3251. https://doi.org/10.1007/S13197-020-04355-Z

Valadez-carmona, L., Cortez-Garcia, R. M., Plazola-Jacinto, C. P., Ortiz-Moreno, A., & Necoechea-Mondrago, H. (2016). Effect of microwave drying and oven drying on the water activity, color, phenolic compounds content and antioxidant activity of coconut husk (Cocos nucifera L.). Journal of Food Science Technology. https://doi.org/10.1007/s13197-016-2324-7

Viana, H. N. A. C., Sganzerla, W. G., Castro, L. E. N., & Veeck, A. P. de L. (2023). Characterization of baru (Dipteryx alata Vog.) and application of its agro-industrial by-product in the formulation of cookies. Journal of Agriculture and Food Research, 12. https://doi.org/10.1016/j.jafr.2023.100577

Vianello R, Maksic ZB (2006) Triadic analysis of substituent efectsgas-phase acidity of para-substituted phenols. Tetrahedron 62:3402–3411.

Vo, T. P., Duong, N. H. N., Phan, T. H., Mai, T. P., & Nguyen, D. Q. (2022). Optimized Cellulase-Hydrolyzed Deoiled Coconut Cake Powder as Wheat Flour Substitute in Cookies. Foods 2022, Vol. 11, Page 2709, 11(17), 2709. https://doi.org/10.3390/FOODS11172709

Wang, L., Pan, X., Jiang, L., Chu, Y., Gao, S., Jiang, X., Zhang, Y., Chen, Y., Luo, S., & Peng, C. (2022). The Biological Activity Mechanism of Chlorogenic Acid and Its Applications in Food Industry: A Review. In Frontiers in Nutrition (Vol. 9). Frontiers Media S.A. https://doi.org/10.3389/fnut.2022.943911

Younis, K., Islam, R., Jahan, K., Kundu, M., & Ray, A. (2016). Investigating the effect of mosambi (Citrus limetta) peel powder on physicochemical and sensory properties of cookies. Quality Assurance and Safety of Crops and Foods, 8(3), 393–398. https://doi.org/10.3920/QAS2015.0706

Zeb, A. (2020). Concept, Mechanism, and Applications of Phenolic Antioxidants in Foods. *J. Food Biochem.*, 44, e13394.

Žilić, S., Kocadağli, T., Vančetović, J., & Gökmen, V. (2016). Effects of baking conditions and dough formulations on phenolic compound stability, antioxidant capacity and color of cookies made from anthocyanin-rich corn flour. LWT, 65, 597–603. https://doi.org/10.1016/j.lwt.2015.08.057.