

DAFTAR PUSTAKA

- Ac-Pangan, M. F., Engeseth, N. J., & Cadwallader, K. R. (2023). Identification of Important Aroma Components and Sensory Profiles of Minimally Processed (Unroasted) and Conventionally Roasted Dark Chocolates. *Journal of Agricultural and Food Chemistry*, 71(25), 9856–9867. <https://doi.org/10.1021/ACS.JAFC.3C01366>
- Afoakwa, E. O. (2010). *Chocolate Science and Technology*. Wiley. <https://doi.org/10.1002/9781444319880>
- Afoakwa, E. O. (2016). *Chocolate Science and Technology: Second Edition*. *Chocolate Science and Technology: Second Edition*, 1–524. <https://doi.org/10.1002/9781118913758>
- Afoakwa, E. O., Ofosu-Ansah, E., Takrama, J. F., Budu, A. S., & Mensah-Brown, H. (2014). Changes in chemical quality of cocoa butter during roasting of pulp pre-conditioned and fermented cocoa (*Theobroma cacao*) beans. *International Food Research Journal*, 21(6), 2221–2227.
- Afoakwa, E. O., Paterson, A., Fowler, M., & Vieira, J. (2009). Influence of tempering and fat crystallization behaviours on microstructural and melting properties in dark chocolate systems. *Food Research International*, 42(1), 200–209. <https://doi.org/10.1016/J.FOODRES.2008.10.007>
- Afoakwa, E. O., Quao, J., Takrama, J., Budu, A. S., & Saalia, F. K. (2013). Changes in chemical quality of cocoa butter during roasting of pulp pre-conditioned and fermented cocoa (*Theobroma cacao*) beans. *Journal of Food Science and Technology*, 50(6), 1097–1105. <https://doi.org/10.1007/S13197-011-0446-5>
- Amri, L. H. A., Muchtar, E., & Pradipta, I. Z. (2021). ACCORDANCE OF THE QUALITY OF 250 GRAM IVORY CARTON PACKING BASED ON INDONESIAN NATIONAL STANDARD (SNI) DUPLEX CARTON. *KREATOR*, 2(1). <https://doi.org/10.46961/kreator.v3i2.295>
- Aremu, C. Y., Agiang, M. A., & Ayatse, J. O. I. (1995). Nutrient and antinutrient profiles of raw and fermented cocoa beans. *Plant Foods for Human Nutrition*, 48(3), 217–223. <https://doi.org/10.1007/BF01088443>
- Barišić, V., Kopjar, M., Jozinović, A., Flanjak, I., Ačkar, Đ., Miličević, B., Šubarić, D., Jokić, S., & Babić, J. (2019a). The Chemistry behind Chocolate Production. *Molecules*, 24(17), 3163. <https://doi.org/10.3390/molecules24173163>
- Barišić, V., Kopjar, M., Jozinović, A., Flanjak, I., Ačkar, Đ., Miličević, B., Šubarić, D., Jokić, S., & Babić, J. (2019b). The Chemistry behind Chocolate Production. *Molecules*, 24(17), 3163. <https://doi.org/10.3390/molecules24173163>
- Barišić, V., Šubarić, D., Jašić, M., & Babić, J. (2019). FUNCTION OF FOOD ADDITIVES IN CHOCOLATE PRODUCTION. *Hrana u Zdravlju i Bolesti : Znanstveno-Stručni Časopis Za Nutricionizam i Dijetetiku*, 8(2), 123–128.

- Bauer, D., de Abreu, J. P., Oliveira, H. S. S., Goes-Neto, A., Koblitz, M. G. B., & Teodoro, A. J. (2016). Antioxidant Activity and Cytotoxicity Effect of Cocoa Beans Subjected to Different Processing Conditions in Human Lung Carcinoma Cells. *Oxidative Medicine and Cellular Longevity*, 2016(1). <https://doi.org/10.1155/2016/7428515>
- Beckett, S. T. (2000). *The Science of Chocolate*. Royal Society of Chemistry Paperbacks.
- Beckett, S. T. (2008). The Science of Chocolate. *The Science of Chocolate*. <https://doi.org/10.1039/9781847558053>
- Beckett, S. T. (2009). Industrial Chocolate Manufacture and Use: Fourth Edition. *Industrial Chocolate Manufacture and Use: Fourth Edition*, 1–688. <https://doi.org/10.1002/9781444301588;JOURNAL:JOURNAL:BOOKS;WGROUP:STRING:PUBLICATION>
- Behzadian, M., Khanmohammadi Otahsara, S., Yazdani, M., & Ignatius, J. (2012). A state-of-the-art survey of TOPSIS applications. *Expert Systems with Applications*, 39(17), 13051–13069. <https://doi.org/10.1016/j.eswa.2012.05.056>
- Belščak, A., Komes, D., Horžić, D., Ganić, K. K., & Karlović, D. (2009). Comparative study of commercially available cocoa products in terms of their bioactive composition. *Food Research International*, 42(5–6), 707–716. <https://doi.org/10.1016/J.FOODRES.2009.02.018>
- Belščak-Cvitanović, A., Komes, D., Benković, M., Karlović, S., Hečimović, I., Ježek, D., & Bauman, I. (2012). Innovative formulations of chocolates enriched with plant polyphenols from *Rubus idaeus* L. leaves and characterization of their physical, bioactive and sensory properties. *Food Research International*, 48(2), 820–830. <https://doi.org/10.1016/J.FOODRES.2012.06.023>
- Biswas, N., Cheow, Y. L., Tan, C. P., & Siow, L. F. (2017). Physical, rheological and sensorial properties, and bloom formation of dark chocolate made with cocoa butter substitute (CBS). *LWT - Food Science and Technology*, 82, 420–428. <https://doi.org/10.1016/j.lwt.2017.04.039>
- Bonatto, C. C., & Silva, L. P. (2015). Cocoa content influences chocolate molecular profile investigated by <sc>MALDI-TOF</sc> mass spectrometry. *Journal of the Science of Food and Agriculture*, 95(8), 1753–1756. <https://doi.org/10.1002/jsfa.6740>
- BPS. (2024). Statistik Kakao Indonesia. In Sub Directorate of Estate Crops Statistics (Ed.), *Badan Pusat Statistik* (Vol. 8). Badan Pusat Statistik. <https://www.bps.go.id/id/publication/2024/11/29/ed255af0c9059f288fb7e1de/statistik-kakao-indonesia-2023.html>
- Brand-Williams, W., Cuvelier, M. E., & Berset, C. (1995). Use of a free radical method to evaluate antioxidant activity. *LWT - Food Science and Technology*, 28(1), 25–30. [https://doi.org/10.1016/S0023-6438\(95\)80008-5](https://doi.org/10.1016/S0023-6438(95)80008-5)

- Briones, V., & Aguilera, J. M. (2005). Image analysis of changes in surface color of chocolate. *Food Research International*, 38(1), 87–94. <https://doi.org/10.1016/j.foodres.2004.09.002>
- Castro-alayo, E. M., Torrejón-valqui, L., Medina-mendoza, M., Cayo-colca, I. S., & Cárdenas-toro, F. P. (2022). Kinetics Crystallization and Polymorphism of Cocoa Butter throughout the Spontaneous Fermentation Process. *Foods*, 11(12), 1769. <https://doi.org/10.3390/FOODS11121769/S1>
- Cazón, P., Morales-Sanchez, E., Velazquez, G., & Vázquez, M. (2022). Measurement of the Water Vapor Permeability of Chitosan Films: A Laboratory Experiment on Food Packaging Materials. *Journal of Chemical Education*, 99(6), 2403–2408. https://doi.org/10.1021/ACS.JCHEMED.2C00449/SUPPL_FILE/ED2C00449_SI_010.DOCX
- Čekon, M., Struhala, K., & Slávik, R. (2017). Cardboard-Based Packaging Materials as Renewable Thermal Insulation of Buildings: Thermal and Life-Cycle Performance. *Journal of Renewable Materials*, 5(Suppl.1), 84–93. <https://doi.org/10.7569/JRM.2017.634135>
- Cerit, İ., Demirkol, O., Avcı, A., & Arkan, B. S. (2024). Phenolic content and oxidative stability of chocolates produced with roasted and unroasted cocoa beans. *Food Science and Technology International*, 30(5), 450–461. <https://doi.org/10.1177/10820132231154429>
- Chacón Ortiz, C. Y., Mori Culqui, P. L., & Chavez Quintana, S. G. (2021). Antioxidantes y polifenoles totales de chocolate negro con incorporación de cacao (*Theobroma cacao* L.) crudo. *Revista de Investigaciones Altoandinas*, 23(4). <https://doi.org/10.18271/RIA.2021.331>
- Chakraborty, S. (2022). TOPSIS and Modified TOPSIS: A comparative analysis. *Decision Analytics Journal*, 2, 100021. <https://doi.org/10.1016/j.dajour.2021.100021>
- De Brito, E. S., Pezoa García, N. H., Amancio, A. C., Valente, A. L. P., Pini, G. F., & Augusto, F. (2001). Effect of autoclaving cocoa nibs before roasting on the precursors of the Maillard reaction and pyrazines. *International Journal of Food Science & Technology*, 36(6), 625–630. <https://doi.org/10.1046/J.1365-2621.2001.00505.X>
- Deshwal, G. K., Panjagari, N. R., & Alam, T. (2019). An overview of paper and paper based food packaging materials: health safety and environmental concerns. *Journal of Food Science and Technology*, 56(10), 4391. <https://doi.org/10.1007/S13197-019-03950-Z>
- De Vuyst, L., & Weckx, S. (2016). The cocoa bean fermentation process: from ecosystem analysis to starter culture development. *Journal of Applied Microbiology*, 121(1), 5–17. <https://doi.org/10.1111/JAM.13045>
- Efraim, P., Alves, A. B., & Jardim, D. C. P. (2011). Revisão: Polifenóis em cacau e derivados: teores, fatores de variação e efeitos na saúde. *Brazilian Journal*

- of Food Technology*, 14(03), 181–201.
<https://doi.org/10.4260/BJFT2011140300023>
- Ewens, H., Metilli, L., & Simone, E. (2021). Analysis of the effect of recent reformulation strategies on the crystallization behaviour of cocoa butter and the structural properties of chocolate. *Current Research in Food Science*, 4, 105–114. <https://doi.org/10.1016/j.crfs.2021.02.009>
- Fadilah, M. A. N., Saputro, A. D., Bangun, S. K., Setiowati, A. D., Rahayoe, S., & Karyadi, J. N. W. (2022). *Increasing the Melting Temperature of Chocolate by Adding Xanthan Gum-Based Hydrogel: A Preliminary Study*. <https://doi.org/10.2991/absr.k.220305.026>
- Fauzi Akbar, Zulisma Anita, & Hamidah Harahap. (2013). PENGARUH WAKTU SIMPAN FILM PLASTIK BIODEGRADASI DARI PATI KULIT SINGKONG TERHADAP SIFAT MEKANIKALNYA. *Jurnal Teknik Kimia USU*, 2(2). <https://doi.org/10.32734/jtk.v2i2.1431>
- Fitriani, N. U., Yusuf, M., & Pirman. (2020). Evaluation of Physicochemical Properties and Sensory Products of Cocoa Liquor and Dark Chocolate High Polyphenols and Flavanoids. *Indian Journal of Science and Technology*, 13(07), 840–859. <https://doi.org/10.17485/ijst/2020/v13i07/149883>
- Galanakis, C. M. (2022). Trends in Sustainable Chocolate Production. *Trends in Sustainable Chocolate Production*, 1–362. <https://doi.org/10.1007/978-3-030-90169-1/COVER>
- Giacometti, J., Jolić, S. M., & Josić, D. (2015). Cocoa Processing and Impact on Composition. *Processing and Impact on Active Components in Food*, 605–612. <https://doi.org/10.1016/B978-0-12-404699-3.00073-1>
- Gray, M. P. (2009). Moulding, Enrobing and Cooling Chocolate Products. *Industrial Chocolate Manufacture and Use: Fourth Edition*, 320–357. <https://doi.org/10.1002/9781444301588.CH14>
- Greweling, P. P. . (2013). *Chocolates and confections : formula, theory, and technique for the artisan confectioner*. John Wiley & Sons.
- Gulcin, İ., & Alwasel, S. H. (2023). DPPH Radical Scavenging Assay. *Processes 2023, Vol. 11, Page 2248, 11(8)*, 2248. <https://doi.org/10.3390/PR11082248>
- Gültekin-Özgüven, M., Berktaş, I., & Özçelik, B. (2016). Influence of processing conditions on procyanidin profiles and antioxidant capacity of chocolates: Optimization of dark chocolate manufacturing by response surface methodology. *LWT - Food Science and Technology*, 66, 252–259. <https://doi.org/10.1016/J.LWT.2015.10.047>
- Gutiérrez, T. J. (2017). State-of-the-Art Chocolate Manufacture: A Review. *Comprehensive Reviews in Food Science and Food Safety*, 16(6), 1313–1344. <https://doi.org/10.1111/1541-4337.12301>,
- Guzmán Penella, S., Boulanger, R., Maraval, I., Kopp, G., Corno, M., Fontez, B., & Fontana, A. (2023). Link between Flavor Perception and Volatile Compound Composition of Dark Chocolates Derived from Trinitario Cocoa

- Beans from Dominican Republic. *Molecules*, 28(9), 3805. <https://doi.org/10.3390/molecules28093805>
- Hřivna, L., Machálková, L., Burešová, I., Nedomová, Š., & Gregor, T. (2021). Texture, color, and sensory changes occurring in chocolate bars with filling during storage. *Food Science & Nutrition*, 9(9), 4863–4873. <https://doi.org/10.1002/FSN3.2434>
- ICCO. (2024, May 31). *PRODUCTION OF COCOA BEANS (thousand tonnes)*. International Cocoa Organization. https://www.icco.org/wp-content/uploads/Production_QBCS-L-No.-2.pdf
- Ioannidi, E., Aarøe, E., de Juan, A., Risbo, J., & van den Berg, F. W. J. (2023). Modeling changes in chocolate during production and storage by ATR-FT-IR spectroscopy and MCR-ALS hybrid soft and hard modeling. *Chemometrics and Intelligent Laboratory Systems*, 233, 104735. <https://doi.org/10.1016/j.chemolab.2022.104735>
- Jaćimović, S., Popović-Djordjević, J., Sarić, B., Krstić, A., Mickovski-Stefanović, V., & Pantelić, N. (2022). Antioxidant Activity and Multi-Elemental Analysis of Dark Chocolate. *Foods*, 11(10), 1445. <https://doi.org/10.3390/FOODS11101445/S1>
- Jolliffe, I. T., & Cadima, J. (2016). Principal component analysis: a review and recent developments. *Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Sciences*, 374(2065), 20150202. <https://doi.org/10.1098/RSTA.2015.0202>
- Kongor, J. E., Hinneh, M., de Walle, D. Van, Afoakwa, E. O., Boeckx, P., & Dewettinck, K. (2016). Factors influencing quality variation in cocoa (*Theobroma cacao*) bean flavour profile — A review. *Food Research International*, 82, 44–52. <https://doi.org/10.1016/J.FOODRES.2016.01.012>
- Kowalski, R., Rosochacki, M., Wyrostek, J., & Islam, M. T. (2023). Evaluating the Quality of Raw Chocolate as an Alternative to Commercial Products. *Applied Sciences*, 13(3), 1274. <https://doi.org/10.3390/app13031274>
- La Mantia, A., Ianni, F., Schoubben, A., Cespi, M., Lisjak, K., Guarnaccia, D., Sardella, R., & Blasi, P. (2023). Effect of Cocoa Roasting on Chocolate Polyphenols Evolution. *Antioxidants 2023, Vol. 12, Page 469*, 12(2), 469. <https://doi.org/10.3390/ANTIOX12020469>
- Lamberti, M., & Escher, F. (2007). Aluminium Foil as a Food Packaging Material in Comparison with Other Materials. *Food Reviews International*, 23(4), 407–433. <https://doi.org/10.1080/87559120701593830>
- Lamuela-Raventós, R. M., Romero-Pérez, A. I., Andrés-Lacueva, C., & Tornero, A. (2005). Review: Health effects of cocoa flavonoids. *Food Science and Technology International*, 11(3), 159–176. <https://doi.org/10.1177/1082013205054498;PAGE:STRING:ARTICLE/CHAPTER>
- Lemarcq, V., Tuenter, E., Bondarenko, A., Van de Walle, D., De Vuyst, L., Pieters, L., Sioriki, E., & Dewettinck, K. (2020). Roasting-induced changes in cocoa

- beans with respect to the mood pyramid. *Food Chemistry*, 332, 127467. <https://doi.org/10.1016/J.FOODCHEM.2020.127467>
- Liendo, R., Padilla, F. C., & Quintana, A. (1997). Characterization of cocoa butter extracted from Criollo cultivars of *Theobroma cacao* L. *Food Research International*, 30(9), 727–731. [https://doi.org/10.1016/S0963-9969\(98\)00025-8](https://doi.org/10.1016/S0963-9969(98)00025-8)
- Machálková, L., Hřivna, L., Nedomová, Š., & Jůzl, M. (2015). The effect of storage temperature on the quality and formation of blooming defects in chocolate confectionery. *Potravinarstvo Slovak Journal of Food Sciences*, 9(1), 39–47. <https://doi.org/10.5219/425>
- McShea, A., Ramiro-Puig, E., Munro, S. B., Casadesus, G., Castell, M., & Smith, M. A. (2008). Clinical benefit and preservation of flavonols in dark chocolate manufacturing. *Nutrition Reviews*, 66(11), 630–641. <https://doi.org/10.1111/J.1753-4887.2008.00114.X>,
- Mexis, S. F., Badeka, A. V., Riganakos, K. A., & Kontominas, M. G. (2010). Effect of active and modified atmosphere packaging on quality retention of dark chocolate with hazelnuts. *Innovative Food Science and Emerging Technologies*, 11(1), 177–186. <https://doi.org/10.1016/j.ifset.2009.09.001>
- Minifie, B. W. (1989). *Chocolate, Cocoa and Confectionery: Science and Technology*. Springer Science & Business.
- Mohamadi Alasti, F., Asefi, N., Maleki, R., & SeiedlouHeris, S. S. (2019). Investigating the flavor compounds in the cocoa powder production process. *Food Science & Nutrition*, 7(12), 3892–3901. <https://doi.org/10.1002/FSN3.1244>
- Mokbul, M., Cheow, Y. L., & Siow, L. F. (2023). Physical properties, sensory profile and storage stability of compound chocolates made with cocoa butter replacer consisting of mango kernel fat and rice bran oil. *Food Chemistry Advances*, 3, 100515. <https://doi.org/10.1016/j.focha.2023.100515>
- Montoya, C. C., Valencia, W. G., Sierra, J. A., & Penagos, L. (2021). Enhanced pink-red hues in processed powders from unfermented cacao beans. *LWT*, 138, 110671. <https://doi.org/10.1016/j.lwt.2020.110671>
- Muhammad, D. R. A., Gonzalez, C. G., Doost, A. S., Van de Walle, D., Van der Meeren, P., & Dewettinck, K. (2019). Improvement of Antioxidant Activity and Physical Stability of Chocolate Beverage Using Colloidal Cinnamon Nanoparticles. *Food and Bioprocess Technology*, 12(6), 976–989. <https://doi.org/10.1007/S11947-019-02271-5/FIGURES/8>
- Nightingale, L. M., Cadwallader, K. R., & Engeseth, N. J. (2012). Changes in Dark Chocolate Volatiles during Storage. *Journal of Agricultural and Food Chemistry*, 60(18), 4500–4507. <https://doi.org/10.1021/JF204718Z>
- Nightingale, L. M., Lee, S., & Engeseth, N. J. (2011). Impact of Storage on Dark Chocolate: Texture and Polymorphic Changes. *Journal of Food Science*, 76(1). <https://doi.org/10.1111/j.1750-3841.2010.01970.x>

- Oracz, J., & Nebesny, E. (2014). Influence of roasting conditions on the biogenic amine content in cocoa beans of different *Theobroma cacao* cultivars. *Food Research International*, 55, 1–10. <https://doi.org/10.1016/j.foodres.2013.10.032>
- Oracz, J., & Nebesny, E. (2019). Effect of roasting parameters on the physicochemical characteristics of high-molecular-weight Maillard reaction products isolated from cocoa beans of different *Theobroma cacao* L. groups. *European Food Research and Technology*, 245(1), 111–128. <https://doi.org/10.1007/s00217-018-3144-y>
- Osobase, P. (2012). Defining Genetic Diversity in the Chocolate Tree, *Theobroma cacao* L. Grown in West and Central Africa. In *Genetic Diversity in Plants*. InTech. <https://doi.org/10.5772/33101>
- Ostrowska-Ligęza, E., Dolatowska-Żebrowska, K., Wirkowska-Wojdyła, M., Bryś, J., & Górska, A. (2021). Comparison of Thermal Characteristics and Fatty Acids Composition in Raw and Roasted Cocoa Beans from Peru (Criollo) and Ecuador (Forastero). *Applied Sciences*, 11(6), 2698. <https://doi.org/10.3390/app11062698>
- Piergiovanni, L., & Limbo, S. (2016). *Metal Packaging Materials*. 13–22. https://doi.org/10.1007/978-3-319-24732-8_3
- Pokharel, B. (2023). Cocoa Bean Fermentation: Impact on Chocolate Flavor and Quality. *International Journal of Science and Research*, 12(6), 1668–1674. <https://doi.org/10.21275/SR23614230652>
- Puchol-Miquel, M., Palomares, C., Barat, J. M., & Perez-Esteve, É. (2021). Formulation and physico-chemical and sensory characterisation of chocolate made from reconstituted cocoa liquor and high cocoa content. *LWT*, 137, 110492. <https://doi.org/10.1016/j.lwt.2020.110492>
- Rohan, T. A. (1963). *Processing of raw cocoa for the market*. Food and Agriculture Organization of the United Nation.
- Sabahannur, S., Alimuddin, S., & Rahmawati, -. (2018). Changes in Phenol Level and Antioxidant Activity of Cocoa Beans During Fermentation and Roasting. *Journal of Food Research*, 7(4), p23. <https://doi.org/10.5539/JFR.V7N4P23>
- Saputro, A. D. (2017). *Structure-function relations of palm sap sugar in dark chocolate* [PhD Thesis]. Ghent University.
- Saputro, A. D., Van de Walle, D., Aidoo, R. P., Mensah, M. A., Delbaere, C., De Clercq, N., Van Durme, J., & Dewettinck, K. (2017). Quality attributes of dark chocolates formulated with palm sap-based sugar as nutritious and natural alternative sweetener. *European Food Research and Technology*, 243(2), 177–191. <https://doi.org/10.1007/S00217-016-2734-9/TABLES/7>
- Saputro, A. D., Van de Walle, D., & Dewettinck, K. (2020). Physicochemical properties of coarse palm sap sugars as natural alternative sweetener. *Food Bioscience*, 38, 100780. <https://doi.org/10.1016/J.FBIO.2020.100780>
- Saputro, A. D., Van de Walle, D., Hinneh, M., Van Durme, J., & Dewettinck, K. (2018). Aroma profile and appearance of dark chocolate formulated with palm

- sugar–sucrose blends. *European Food Research and Technology*, 244(7), 1281–1292. <https://doi.org/10.1007/S00217-018-3043-2/TABLES/4>
- Saputro, A. D., Van de Walle, D., Kadivar, S., Bin Sintang, M. D., Van der Meeren, P., & Dewettinck, K. (2017a). Investigating the rheological, microstructural and textural properties of chocolates sweetened with palm sap-based sugar by partial replacement. *European Food Research and Technology*, 243(10), 1729–1738. <https://doi.org/10.1007/s00217-017-2877-3>
- Saputro, A. D., Van de Walle, D., Kadivar, S., Bin Sintang, M. D., Van der Meeren, P., & Dewettinck, K. (2017b). Investigating the rheological, microstructural and textural properties of chocolates sweetened with palm sap-based sugar by partial replacement. *European Food Research and Technology*, 243(10), 1729–1738. <https://doi.org/10.1007/s00217-017-2877-3>
- Sarfarazi, M., & Mohebbi, M. (2020). An investigation into the crystalline structure, and the rheological, thermal, textural and sensory properties of sugar-free milk chocolate: effect of inulin and maltodextrin. *Journal of Food Measurement and Characterization*, 14(3), 1568–1581. <https://doi.org/10.1007/s11694-020-00405-4>
- Silva, T. L. T. da, Grimaldi, R., & Gonçalves, L. A. G. (2017). Temperature, time and fat composition effect on fat bloom formation in dark chocolate. *Food Structure*, 14, 68–75. <https://doi.org/10.1016/j.foostr.2017.06.006>
- Simonin, J. P. (2016). On the comparison of pseudo-first order and pseudo-second order rate laws in the modeling of adsorption kinetics. *Chemical Engineering Journal*, 300, 254–263. <https://doi.org/10.1016/J.CEJ.2016.04.079>
- Solovyov, S. E., & Goldman, A. Y. (2004). Permeability of multi-layer structures. *E-Polymers*, 4(1). <https://doi.org/10.1515/EPOLY.2004.4.1.234/MACHINEREADABLECITATION/RIS>
- Stortz, T. A., & Marangoni, A. G. (2011). Heat resistant chocolate. *Trends in Food Science & Technology*, 22(5), 201–214. <https://doi.org/10.1016/j.tifs.2011.02.001>
- Subandrio, S. (2018). APLIKASI PROSES TEMPERING UNTUK OPTIMASI TITIK LELEH COKELAT HITAM PRODUK PENGOLAHAN PINTAS. *Jurnal Teknologi Industri Pertanian*, 28(3), 262–268. <https://doi.org/10.24961/j.tek.ind.pert.2018.28.3.262>
- Syafira, N. S., Saputro, A. D., Khasanah, A. N., Oetama, T., Setiowati, A. D., Rahayoe, S., & Bintoro, N. (2021). Impact of Cocoa Butter Replacer (CBR) proportion on the physical characteristics of compound dark chocolate. *IOP Conference Series: Earth and Environmental Science*, 653(1), 012035. <https://doi.org/10.1088/1755-1315/653/1/012035>
- Tafurt, G., Suarez, O., Lares, M. del C., Álvarez, C., & Liconte, N. (2020). Capacidad antioxidante de un chocolate oscuro de granos cacao orgánico sin fermentar. *Revista Digital de Postgrado*, 10(1), 280–280. <https://doi.org/10.37910/RDP.2021.10.1.E280>

- Talbot, G. (2009). Compound Coatings. In Science and Technology of Enrobed and Filled Chocolate, Confectionery and Bakery Products (pp. 80–100). Woodhead Publishing Ltd.
- Tape, J. S., Houphouet, K. R., Kadjo, A. C., Yao, K. M., Kédjébo, K. B. D., Koné, K. M., Guéhi, T. S., & Montet, D. (2023). Free Fatty Acids and Cocoa Butter Quality Traits: Causes and Impact on Consumers' Health. *Journal of Advances in Microbiology*, 23(3), 21–32. <https://doi.org/10.9734/jamb/2023/v23i3713>
- Taufarová, A., & Tkadlecová, T. (2022). Effect of storage on sensory quality of chocolate. *MASO INTERNATIONAL – JOURNAL OF FOOD SCIENCE AND TECHNOLOGY*, 12(1), 41–48. <https://doi.org/10.2478/mjfst-2022-0013>
- Tran, P. D., Van Durme, J., Van de Walle, D., de Winne, A., Delbaere, C., de Clercq, N., Phan, T. T. Q., Phuc Nguyen, C., Tran, D. N., & Dewettinck, K. (2016). Quality Attributes of Dark Chocolate Produced from Vietnamese Cocoa Liquors. *Journal of Food Quality*, 39(4), 311–322. <https://doi.org/10.1111/jfq.12200>
- Trinidad, T. P., Mallillin, A. C., Sagum, R. S., & Encabo, R. R. (2010). Glycemic index of commonly consumed carbohydrate foods in the Philippines. *Journal of Functional Foods*, 2(4), 271–274. <https://doi.org/10.1016/J.JFF.2010.10.002>
- Urbańska, B., & Kowalska, J. (2019). Comparison of the Total Polyphenol Content and Antioxidant Activity of Chocolate Obtained from Roasted and Unroasted Cocoa Beans from Different Regions of the World. *Antioxidants*, 8(8), 283. <https://doi.org/10.3390/antiox8080283>
- van der Wal, B., Kettenes, D. K., Stoffelsma, J., Sipma, G., & Semper, A. T. H. J. (1971). New Volatile Components of Roasted Cocoa. *Journal of Agricultural and Food Chemistry*, 19(2), 276–280. https://doi.org/10.1021/JF60174A005/ASSET/JF60174A005.FP.PNG_V03
- Verde, A. B., Alvim, I. D., Luccas, V., Marangoni, L., & Alves, R. M. V. (2022). The influence of formulation and packaging material on the rheological properties of milk chocolate. *Applied Food Research*, 2(2), 100199. <https://doi.org/10.1016/J.AFRES.2022.100199>
- Verde, A. B., Alvim, I. D., Luccas, V., & Vercelino Alves, R. M. (2021). Stability of milk chocolate with hygroscopic fibers during storage. *LWT*, 137, 110477. <https://doi.org/10.1016/J.LWT.2020.110477>
- Wrolstad, R. E., & Smith, D. E. (2017). *Color Analysis* (pp. 545–555). https://doi.org/10.1007/978-3-319-45776-5_31
- Wulandari, A., W. S., & N. D. (2013). Prediksi umur simpan kerupuk kemplang dalam kemasan plastik polipropilen beberapa ketebalan. *Jurnal Teknik Pertanian Lampung*, 2(2), 105–114.
- Youssef, M. M., & Abo Bakr, T. M. (2019). Effect of Roasting on Physicochemical Properties of Cocoa Beans. *Australian Journal of French Studies*, 16(2), 1–7. <https://doi.org/10.21608/AJFS.2019.14658.1012>

- Yuwono, S. S., Istianah, N., & Mubarak, A. Z. (2022). *Kinetika Reaksi pada Bahan Pangan dan Produk Fermentasi*. Universitas Brawijaya Press.
- Zaric, D., Pajin, B., Loncarevic, I., Soronja-Simovic, D., & Seres, Z. (2012). The impact of the manufacturing process on the hardness and sensory properties of milk chocolate. *Acta Periodica Technologica*, 43, 139–148. <https://doi.org/10.2298/APT1243139Z>
- Żyżelewicz, D., Budryn, G., Oracz, J., Antolak, H., Kręgiel, D., & Kaczmarska, M. (2018). The effect on bioactive components and characteristics of chocolate by functionalization with raw cocoa beans. *Food Research International*, 113, 234–244. <https://doi.org/10.1016/j.foodres.2018.07.017>
- Zzaman, W., Bhat, R., & Yang, T. A. (2014). Effect of superheated steam roasting on the phenolic antioxidant properties of cocoa beans. *Journal of Food Processing and Preservation*, 38(4), 1932–1938. <https://doi.org/10.1111/JFPP.12166;PAGEGROUP:STRING:PUBLICATION>