

DAFTAR PUSTAKA

- Abd Ghani, A., Adachi, S., Shiga, H., Neoh, T. L., Adachi, S., & Yoshii, H. (2017). Effect of different dextrose equivalents of maltodextrin on oxidation stability in encapsulated fish oil by spray drying. *Bioscience, Biotechnology, and Biochemistry*, 81(4), 705–711. <https://doi.org/10.1080/09168451.2017.1281721>
- Abu, M. N., Samat, S., Kamarapani, N., Nor Hussein, F., Wan Ismail, W. I., & Hassan, H. F. (2015). *Tinospora crispa* ameliorates insulin resistance induced by high fat diet in wistar rats. *Evidence-based Complementary and Alternative Medicine*, 2015. <https://doi.org/10.1155/2015/985042>
- Afoakwa, E. O. (2016). *Chocolate Science and Technology, 2nd Edition*. John Wiley & Sons. <https://www.wiley.com/en-us/Chocolate+Science+and+Technology%2C+2nd+Edition-p-9781118913789>
- Afoakwa, E. O., Paterson, A., Fowler, M., & Vieira, J. (2008a). Effects of tempering and fat crystallisation behaviour on microstructure, mechanical properties and appearance in dark chocolate systems. *Journal of Food Engineering*, 89(2), 128–136. <https://doi.org/10.1016/j.jfoodeng.2008.04.021>
- Afoakwa, E. O., Paterson, A., Fowler, M., & Vieira, J. (2008b). Modelling tempering behaviour of dark chocolates from varying particle size distribution and fat content using response surface methodology. *Innovative Food Science & Emerging Technologies*, 9(4), 527–533. <https://doi.org/10.1016/j.ifset.2008.02.002>
- Agustiningsih, Wildan, A., & Mindaningsih. (2010). OPTIMASI CAIRAN PENYARI PADA PEMBUATAN EKSTRAK DAUN PANDAN WANGI (*Pandanus amaryllifolius* Roxb) SECARA MASERASI TERHADAP KADAR FENOLIK DAN FLAVONOID TOTAL. 6(2).
- Al-Adhroey, A. H., Nor, Z. M., Al-Mekhlafi, H. M., & Mahmud, R. (2010). Ethnobotanical study on some Malaysian anti-malarial plants: A community based survey. *Journal of Ethnopharmacology*, 132(1), 362–364. <https://doi.org/10.1016/j.jep.2010.08.006>
- Alara, O. R., Abdurahman, N. H., & Ukaegbu, C. I. (2021). Extraction of phenolic compounds: A review. *Current Research in Food Science*, 4, 200–214. <https://doi.org/10.1016/j.crfs.2021.03.011>
- Albak, F., & Tekin, A. R. (2014). *Development of Functional Chocolate with Spices and Lemon Peel Powder by using Response Surface Method: Development of Functional Chocolate*.
- Allen, L., de Benoist, B., Dary, O., & Hurrell, R. (2006). Global Progress—Food Fortification. Dalam *World Health Organization*.
- Almoosawi, S., Fyfe, L., Ho, C., & Al-Dujaili, E. (2010). The effect of polyphenol-rich dark chocolate on fasting capillary whole blood glucose, total cholesterol, blood pressure and glucocorticoids in healthy overweight and obese subjects. *British Journal of Nutrition*, 103(6), 842–850. <https://doi.org/10.1017/S0007114509992431>
- Altimiras, P., Pyle, L., & Bouchon, P. (2007). Structure–fat migration relationships during storage of cocoa butter model bars: Bloom development and possible

- mechanisms. *Journal of Food Engineering*, 80(2), 600–610. <https://doi.org/10.1016/j.jfoodeng.2006.06.022>
- Anantharaju, P. G., Gowda, P. C., Vimalambike, M. G., & Madhunapantula, S. V. (2016). An overview on the role of dietary phenolics for the treatment of cancers. *Nutrition Journal*, 15(1), 99. <https://doi.org/10.1186/s12937-016-0217-2>
- Andriani, M., Permana, I. D. G. M., & Widarta, I. W. R. (2019). PENGARUH SUHU DAN WAKTU EKSTRAKSI DAUN BELIMBING WULUH (*Averrhoa bilimbi* L.) TERHADAP AKTIVITAS ANTIOKSIDAN DENGAN METODE ULTRASONIC ASSISTED EXTRACTION (UAE). *Jurnal Ilmu Dan Teknologi Pangan (ITEPA)*, 8(3), 330–340.
- Arana, I. (2012). *Physical Properties of Foods: Novel Measurement Techniques and Applications*. CRC Press.
- Armenta, S., Garrigues, S., & de la Guardia, M. (2015). The role of green extraction techniques in Green Analytical Chemistry. *TrAC Trends in Analytical Chemistry*, 71, 2–8. <https://doi.org/10.1016/j.trac.2014.12.011>
- Arruda, H. S., Silva, E. K., Pereira, G. A., Angolini, C. F. F., Eberlin, M. N., Meireles, M. A. A., & Pastore, G. M. (2019). Effects of high-intensity ultrasound process parameters on the phenolic compounds recovery from araticum peel. *Ultrasonics Sonochemistry*, 50, 82–95. <https://doi.org/10.1016/j.ultsonch.2018.09.002>
- A_S00. (2018, Juni 26). Answer to “Why doesnt curry powder completely dissolve when heating in oil?” Seasoned Advice. <https://cooking.stackexchange.com/a/90588>
- Azwanida, N. (2015). A Review on the Extraction Methods Use in Medicinal Plants, Principle, Strength and Limitation. *Medicinal & Aromatic Plants*, 04(03). <https://doi.org/10.4172/2167-0412.1000196>
- Bajaj, P., & Kaur, G. (2022). Acute Sleep Deprivation-Induced Anxiety and Disruption of Hypothalamic Cell Survival and Plasticity: A Mechanistic Study of Protection by Butanol Extract of *Tinospora cordifolia*. *Neurochemical Research*, 47(6), 1692–1706. <https://doi.org/10.1007/s11064-022-03562-8>
- Barthold, S., Hittinger, M., Primavessy, D., Zapp, A., Groß, H., & Schneider, M. (2019). Preparation of maltodextrin nanoparticles and encapsulation of bovine serum albumin – Influence of formulation parameters. *European Journal of Pharmaceutics and Biopharmaceutics*, 142, 405–410. <https://doi.org/10.1016/j.ejpb.2019.07.003>
- Batista, N. N., de Andrade, D. P., Ramos, C. L., Dias, D. R., & Schwan, R. F. (2016). Antioxidant capacity of cocoa beans and chocolate assessed by FTIR. *Food Research International*, 90, 313–319. <https://doi.org/10.1016/j.foodres.2016.10.028>
- Beckett, S. T. (2008). *Industrial Chocolate Manufacture and Use* (1 ed.). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781444301588>
- Beckett, S. T. (2019). *The Science of Chocolate*. Royal Society of Chemistry.
- 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>
- Bendicho, C., De La Calle, I., Pena, F., Costas, M., Cabaleiro, N., & Lavilla, I. (2012). Ultrasound-assisted pretreatment of solid samples in the context of green analytical chemistry. *TrAC Trends in Analytical Chemistry*, 31, 50–60. <https://doi.org/10.1016/j.trac.2011.06.018>
- Bhusari, S. N., Muzaffar, K., & Kumar, P. (2014). Effect of carrier agents on physical and microstructural properties of spray dried tamarind pulp powder. *Powder Technology*, 266, 354–364. <https://doi.org/10.1016/j.powtec.2014.06.038>
- Bi, Y., Lu, Y., Yu, H., & Luo, L. (2019). Optimization of ultrasonic-assisted extraction of bioactive compounds from *Sargassum henslowianum* using response surface methodology. *Pharmacognosy Magazine*, 15(60), 156. https://doi.org/10.4103/pm.pm_347_18
- Bolenz, S., & Manske, A. (2013). Impact of fat content during grinding on particle size distribution and flow properties of milk chocolate. *European Food Research and Technology*, 236(5), 863–872. <https://doi.org/10.1007/s00217-013-1944-7>
- Bordin Schumacher, A., Brandelli, A., Schumacher, E. W., Carrion Macedo, F., Pieta, L., Venzke Klug, T., & Vogt de Jong, E. (2009). Development and evaluation of a laboratory scale conch for chocolate production. *International Journal of Food Science & Technology*, 44(3), 616–622. <https://doi.org/10.1111/j.1365-2621.2008.01877.x>
- Borrmann, D., Pierucci, A. P. T. R., Leite, S. G. F., & Leão, M. H. M. da R. (2013). Microencapsulation of passion fruit (*Passiflora*) juice with n-octenylsuccinate-derivatised starch using spray-drying. *Food and Bioprocess Technology*, 91(1), 23–27. <https://doi.org/10.1016/j.fbp.2012.08.001>
- Bouafia, M., Colak, N., Ayaz, F. A., Benarfa, A., Harrat, M., Gourine, N., & Yousfi, M. (2021). The optimization of ultrasonic-assisted extraction of *Centaurea* sp. Antioxidative phenolic compounds using response surface methodology. *Journal of Applied Research on Medicinal and Aromatic Plants*, 25, 100330. <https://doi.org/10.1016/j.jarmap.2021.100330>
- Boverhof, D. R., Bramante, C. M., Butala, J. H., Clancy, S. F., Lafranconi, M., West, J., & Gordon, S. C. (2015). Comparative assessment of nanomaterial definitions and safety evaluation considerations. *Regulatory Toxicology and Pharmacology*, 73(1), 137–150. <https://doi.org/10.1016/j.yrtph.2015.06.001>
- Briones, V., Aguilera, J. M., & Brown, C. (2006). Effect of surface topography on color and gloss of chocolate samples. *Journal of Food Engineering*, 77(4), 776–783. <https://doi.org/10.1016/j.jfoodeng.2005.08.004>
- Budiastra, M. S., Usman Ahmad, I Wayan. (2017, Oktober 26). *Aplikasi Gelombang Ultrasonik untuk Meningkatkan Rendemen Ekstraksi dan Efektivitas Antioksidan Kulit Manggis* / *Jurnal Keteknik Pertanian*. <https://jurnal.ipb.ac.id/index.php/jtep/article/view/18513>
- Caligiani, A., Palla, L., Acquotti, D., Marseglia, A., & Palla, G. (2014). Application of ¹H NMR for the characterisation of cocoa beans of different geographical

- origins and fermentation levels. *Food Chemistry*, 157, 94–99. <https://doi.org/10.1016/j.foodchem.2014.01.116>
- Chau, C.-F., Wu, S.-H., & Yen, G.-C. (2007). The development of regulations for food nanotechnology. *Trends in Food Science & Technology*, 18(5), 269–280. <https://doi.org/10.1016/j.tifs.2007.01.007>
- Choiriyah, N. A. (2015). *Nanoenkapsulasi Ekstrak Fenolik Rosella dengan Enkapsulan Inulin, Kombinasi dengan Kitosan dan Maltodekstrin Menggunakan Metode Spray Drying* [Universitas Gadjah Mada]. <http://etd.repository.ugm.ac.id/penelitian/detail/89114>
- Cidell, J. L., & Alberts, H. C. (2006). Constructing quality: The multinational histories of chocolate. *Geoforum*, 37(6), 999–1007. <https://doi.org/10.1016/j.geoforum.2006.02.006>
- Covas, M.-I., Nyssönen, K., Poulsen, H. E., Kaikkonen, J., Zunft, H.-J. F., Kiesewetter, H., Gaddi, A., de la Torre, R., Mursu, J., Bäumler, H., Nascetti, S., Salonen, J. T., Fitó, M., Virtanen, J., & Marrugat, J. (2006). The Effect of Polyphenols in Olive Oil on Heart Disease Risk Factors. *Annals of Internal Medicine*, 145(5), 333–341. <https://doi.org/10.7326/0003-4819-145-5-200609050-00006>
- Da Porto, C., Porretto, E., & Decorti, D. (2013). Comparison of ultrasound-assisted extraction with conventional extraction methods of oil and polyphenols from grape (*Vitis vinifera* L.) seeds. *Ultrasonics Sonochemistry*, 20(4), 1076–1080. <https://doi.org/10.1016/j.ultsonch.2012.12.002>
- Dale, S. (2017). Chocolate compounds and coatings. Dalam *Beckett's Industrial Chocolate Manufacture and Use* (hlm. 479–491). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118923597.ch19>
- de Kruif, C. G., Weinbreck, F., & de Vries, R. (2004). Complex coacervation of proteins and anionic polysaccharides. *Current Opinion in Colloid & Interface Science*, 9(5), 340–349. <https://doi.org/10.1016/j.cocis.2004.09.006>
- de Souza, V. B., Thomazini, M., Echalar Barrientos, M. A., Nalin, C. M., Ferro-Furtado, R., Genovese, M. I., & Favaro-Trindade, C. S. (2018). Functional properties and encapsulation of a proanthocyanidin-rich cinnamon extract (*Cinnamomum zeylanicum*) by complex coacervation using gelatin and different polysaccharides. *Food Hydrocolloids*, 77, 297–306. <https://doi.org/10.1016/j.foodhyd.2017.09.040>
- Decroix, L., Soares, D. D., Meeusen, R., Heyman, E., & Tonoli, C. (2018). Cocoa Flavanol Supplementation and Exercise: A Systematic Review. *Sports Medicine*, 48(4), 867–892. <https://doi.org/10.1007/s40279-017-0849-1>
- Destandau, E., Michel, T., & Elfakir, C. (2013). Microwave-Assisted Extraction. Dalam *RSC Green Chemistry* (hlm. 113–156). <https://doi.org/10.1039/9781849737579-00113>
- Dewan, D. A. (2018). *Analisis Senyawa Aktif Batang Brotowali (Tinospora crispa L. Miers) dan Efeknya terhadap Leukoposis dan Tromboposis pada Sumsum Tulang Tikus Wistar (Rattus norvegicus)* [Universitas Gadjah Mada]. <http://etd.repository.ugm.ac.id/penelitian/detail/161469>
- Diana, L. (2016). *Hubungan Antara Pola Konsumsi Makanan Jajanan Dengan Appetite (Nafsu Makan) Pada Anak Sekolah Usia 9-11 Tahun Di SDN*

- Balongrejo 1 Kecamatan Sugihwaras Kabupaten Bojonegoro*. [Sarjana, Universitas Brawijaya]. https://doi.org/10.13.DAFTAR_PUSTAKA.PDF
- Dorđević, V., Balanč, B., Belščak-Cvitanović, A., Lević, S., Trifković, K., Kalušević, A., Kostić, I., Komes, D., Bugarski, B., & Nedović, V. (2015). Trends in Encapsulation Technologies for Delivery of Food Bioactive Compounds. *Food Engineering Reviews*, 7(4), 452–490. <https://doi.org/10.1007/s12393-014-9106-7>
- Efraim, P., Marson, G. C., Jardim, D. C. P., Garcia, A. O., & Yotsuynagi, K. (2011). Influence of phytosterols addition in the rheology and sensory attributes of dark chocolate. *Procedia Food Science*, 1, 1633–1637. <https://doi.org/10.1016/j.profoo.2011.09.241>
- Elboughdiri, N. (2018). Effect of Time, Solvent-Solid Ratio, Ethanol Concentration and Temperature on Extraction Yield of Phenolic Compounds From Olive Leaves. *Engineering, Technology & Applied Science Research*, 8(2), 2805–2808. <https://doi.org/10.48084/etasr.1983>
- Entegris. (2019). *Particle Size Analysis Overview*.
- Ezhilarasi, P. N., Karthik, P., Chhanwal, N., & Anandharamakrishnan, C. (2013). Nanoencapsulation Techniques for Food Bioactive Components: A Review. *Food and Bioprocess Technology*, 6(3), 628–647. <https://doi.org/10.1007/s11947-012-0944-0>
- Fadilah, M. A. N. (2021). *PENGEMBANGAN PROSES PENGOLAHAN COKELAT TAHAN PANAS DENGAN PENAMBAHAN HIDROGEL BERBASIS XANTHAN GUM DAN PENGGUNAAN GULA SEMUT* [Universitas Gadjah Mada]. <http://etd.repository.ugm.ac.id/penelitian/detail/202372>
- Faridi Esfajani, A., Assadpour, E., & Jafari, S. M. (2018). Improving the bioavailability of phenolic compounds by loading them within lipid-based nanocarriers. *Trends in Food Science & Technology*, 76, 56–66. <https://doi.org/10.1016/j.tifs.2018.04.002>
- Fayeulle, N., Vallverdu-Queralt, A., Meudec, E., Hue, C., Boulanger, R., Cheynier, V., & Sommerer, N. (2018). Characterization of new flavan-3-ol derivatives in fermented cocoa beans. *Food Chemistry*, 259, 207–212. <https://doi.org/10.1016/j.foodchem.2018.03.133>
- FDA. (2014). *CFR - Code of Federal Regulations Title 21* (Patent No. 21CFR163.124). <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=163.124>
- Fitriah, S. (2015). *Pengaruh Ekstrak Batang Brotowali (*Tinospora crispa*) terhadap Kematian Larva Nyamuk *Aedes aegypti* dan Sumbangsihnya pada Mata Pelajaran Biologi di SMA/MA*. Universitas Islam Negeri Raden Fatah.
- Frascareli, E. C., Silva, V. M., Tonon, R. V., & Hubinger, M. D. (2011). PHYSICOCHEMICAL PROPERTIES OF COFFEE OIL MICROCAPSULES PRODUCED BY SPRAY DRYING. *AGROBIO ENVASES*. III Jornadas Internacionais, Brasil.
- Furlán, L. T. R., Baracco, Y., Zaritzky, N., & Campderrós, M. E. (2016). *INFLUENCE OF SUCRALOSE AND STEVIA ON THE PHYSICOCHEMICAL PROPERTIES OF FREE SUGAR CHOCOLATE*. 07.

- Genc Polat, D., Durmaz, Y., Konar, N., Toker, O. S., Palabiyik, I., & Tasan, M. (2020). Using encapsulated *Nannochloropsis oculata* in white chocolate as coloring agent. *Journal of Applied Phycology*, 32(5), 3077–3088. <https://doi.org/10.1007/s10811-020-02205-1>
- Gouin, S. (2004). Microencapsulation: Industrial appraisal of existing technologies and trends. *Trends in Food Science & Technology*, 15(7), 330–347. <https://doi.org/10.1016/j.tifs.2003.10.005>
- Goula, A. M., & Adamopoulos, K. G. (2008). Effect of Maltodextrin Addition during Spray Drying of Tomato Pulp in Dehumidified Air: II. Powder Properties. *Drying Technology*, 26(6), 726–737. <https://doi.org/10.1080/07373930802046377>
- Grenha, A., Gomes, M. E., Rodrigues, M., Santo, V. E., Mano, J. F., Neves, N. M., & Reis, R. L. (2010). Development of new chitosan/carrageenan nanoparticles for drug delivery applications. *Journal of Biomedical Materials Research. Part A*, 92(4), 1265–1272. <https://doi.org/10.1002/jbm.a.32466>
- Hamid, Thakur, N. S., & Thakur, A. (2020). Microencapsulation of wild pomegranate flavedo phenolics by lyophilization: Effect of maltodextrin concentration, structural morphology, functional properties, elemental composition and ingredient for development of functional beverage. *LWT*, 133, 110077. <https://doi.org/10.1016/j.lwt.2020.110077>
- Hashemi Gahrue, H., Eskandari, M. H., Mesbahi, G., & Hanifpour, M. A. (2015). Scientific and technical aspects of yogurt fortification: A review. *Food Science and Human Wellness*, 4(1), 1–8. <https://doi.org/10.1016/j.fshw.2015.03.002>
- Helmyati, S., Yulianti, E., Pamungkas, N. P., & Hendarta, N. Y. (2018). *Fortifikasi Pangan Berbasis Sumber Daya Nusantara: Upaya Mengatasi Masalah Defisiensi Zat Gizi Mikro di Indonesia*. UGM PRESS.
- Hidayat, R. S. H., & Napitupulu, R. M. (2015). *Kitab Tumbuhan Obat*. AGRIFLO.
- Ignat, I., Volf, I., & Popa, V. I. (2011). A critical review of methods for characterisation of polyphenolic compounds in fruits and vegetables. *Food Chemistry*, 126(4), 1821–1835. <https://doi.org/10.1016/j.foodchem.2010.12.026>
- Ishihara, S., & Tsutomu, H. (2017). *Method for producing chocolate compound food* (Patent No. JP6063717B2). <https://patents.google.com/patent/JP6063717B2/en>
- Jain, A., Dasgupta, N., Ranjan, S., Singh, V., Singh, H., Purohit, S. D., Mishra, N. C., Yadav, N. P., Haque, S., Mishra, B. N., & Samanta, S. K. (2021). Whey protein based electrosprayed nanospheres for encapsulation and controlled release of bioactive compounds from *Tinospora cordifolia* extract. *Innovative Food Science & Emerging Technologies*, 69, 102671. <https://doi.org/10.1016/j.ifset.2021.102671>
- Jakobek, L. (2015). Interactions of polyphenols with carbohydrates, lipids and proteins. *Food Chemistry*, 175, 556–567. <https://doi.org/10.1016/j.foodchem.2014.12.013>
- Jardim, D. C. P., Orse, A. G., Efraim, P., & Moura, S. C. S. R. de. (2011). Kinetic of white chocolate color loss. *Procedia Food Science*, 1, 1026–1030. <https://doi.org/10.1016/j.profoo.2011.09.153>

- Jovanović, A. A., Đorđević, V. B., Zdunić, G. M., Pljevljakušić, D. S., Šavikin, K. P., Godevac, D. M., & Bugarski, B. M. (2017). Optimization of the extraction process of polyphenols from *Thymus serpyllum* L. herb using maceration, heat- and ultrasound-assisted techniques. *Separation and Purification Technology*, 179, 369–380. <https://doi.org/10.1016/j.seppur.2017.01.055>
- Joye, I. J., & McClements, D. J. (2013). Production of nanoparticles by anti-solvent precipitation for use in food systems. *Trends in Food Science & Technology*, 34(2), 109–123. <https://doi.org/10.1016/j.tifs.2013.10.002>
- Kavya, B., Kavya, N., Ramarao, V., & Venkateshwarlu, G. (2015). *Tinospora cordifolia* (Willd.) Miers: Nutritional, ethnomedical and therapeutic utility. *International Journal of Research in Ayurveda and Pharmacy (IJRAP)*, 6(2), 195–198.
- Kha, T. C., Nguyen, M. H., & Roach, P. D. (2010). Effects of spray drying conditions on the physicochemical and antioxidant properties of the Gac (*Momordica cochinchinensis*) fruit aril powder. *Journal of Food Engineering*, 98(3), 385–392. <https://doi.org/10.1016/j.jfoodeng.2010.01.016>
- Khan, I., Saeed, K., & Khan, I. (2019). Nanoparticles: Properties, applications and toxicities. *Arabian Journal of Chemistry*, 12(7), 908–931. <https://doi.org/10.1016/j.arabjc.2017.05.011>
- Komari. (2013). Karakterisasi dan sifat fisik sistem koaservasi gelatin—Gum akasia. *Jurnal Kefarmasian Indonesia*, 3(2), 70–76.
- Komes, D., Belščak-Cvitanović, A., Škrabal, S., Vojvodić, A., & Bušić, A. (2013). The influence of dried fruits enrichment on sensory properties of bitter and milk chocolates and bioactive content of their extracts affected by different solvents. *LWT - Food Science and Technology*, 53(1), 360–369. <https://doi.org/10.1016/j.lwt.2013.02.016>
- Konan, Y. N., Gurny, R., & Allémann, E. (2002). Preparation and characterization of sterile and freeze-dried sub-200 nm nanoparticles. *International Journal of Pharmaceutics*, 233(1), 239–252. [https://doi.org/10.1016/S0378-5173\(01\)00944-9](https://doi.org/10.1016/S0378-5173(01)00944-9)
- Konar, N., Poyrazoglu, E. S., & Artik, N. (2015). Influence of calcium fortification on physical and rheological properties of sucrose-free prebiotic milk chocolates containing inulin and maltitol. *Journal of Food Science and Technology*, 52(4), 2033–2042. <https://doi.org/10.1007/s13197-013-1229-y>
- Kosaraju, J., Chinni, S., Roy, P. D., Kannan, E., Antony, A. S., & Kumar, M. N. S. (2014). Neuroprotective effect of *Tinospora cordifolia* ethanol extract on 6-hydroxy dopamine induced Parkinsonism. *Indian Journal of Pharmacology*, 46(2), 176–180. <https://doi.org/10.4103/0253-7613.129312>
- Kresnady, B., & Lentera, T. (2003). *Khasiat & Manfaat Brotowali*. AgroMedia.
- Krishnan, S., Kshirsagar, A. C., & Singhal. (2005). The use gum Arabic and modified starch in the microencapsulation of a food flavoring | Request PDF. *Carbohydrate Polymers*, 62(4), 309–315. <https://doi.org/10.1016/j.carbpol.2005.03.020>
- Kusumawardani, I. N. S. (2022). *Proses Pengolahan Cokelat Tahan Panas dengan Penambahan Hidrogel Berbasis Karagenan dan Penggunaan Pemanis*

Gula Semut [Universitas Gadjah Mada].
<http://etd.repository.ugm.ac.id/penelitian/detail/213888>

- Lahrita, L., Kato, E., & Kawabata, J. (2015). Uncovering potential of Indonesian medicinal plants on glucose uptake enhancement and lipid suppression in 3T3-L1 adipocytes. *Journal of Ethnopharmacology*, 168, 229–236. <https://doi.org/10.1016/j.jep.2015.03.082>
- Lee, S.-T., Mi, F.-L., Shen, Y.-J., & Shyu, S.-S. (2001). Equilibrium and kinetic studies of copper(II) ion uptake by Chitosan-tripolyphosphate chelating resin. *Polymer*, 42, 1879–1892. [https://doi.org/10.1016/S0032-3861\(00\)00402-X](https://doi.org/10.1016/S0032-3861(00)00402-X)
- Lestari, T., Nurmala, A., & Nurmallasari, M. (2015). Penetapan kadar polifenol dan aktivitas antibakteri ekstrak etanol daun sintrong (*Crassocephalum crepidiodes* (Benth.) S. Moore). *Jurnal Kesehatan Bakti Tunas Husada*, 13(1), 107–112. <https://doi.org/10.36465/jkbth.v13i1.20>
- Lim, Y. P., Pang, S. F., Yusoff, M. M., Abdul Mudalip, S. K., & Gimbin, J. (2019). Correlation between the extraction yield of mangiferin to the antioxidant activity, total phenolic and total flavonoid content of *Phaleria macrocarpa* fruits. *Journal of Applied Research on Medicinal and Aromatic Plants*, 14, 100224. <https://doi.org/10.1016/j.jarmap.2019.100224>
- Lohani, U. C., & Muthukumarappan, K. (2021). Study of continuous flow ultrasonication to improve total phenolic content and antioxidant activity in sorghum flour and its comparison with batch ultrasonication. *Ultrasonics Sonochemistry*, 71, 105402. <https://doi.org/10.1016/j.ultsonch.2020.105402>
- Lokman, F. E., Gu, H. F., Wan Mohamud, W. N., Yusoff, M. M., Chia, K. L., & Östenson, C. G. (2013). Antidiabetic effect of oral borapetol B compound, isolated from the plant *tinospora crispa*, by stimulating insulin release. *Evidence-based Complementary and Alternative Medicine*, 2013. <https://doi.org/10.1155/2013/727602>
- Lončarević, I., Pajin, B., Fišteš, A., Tumbas Šaponjac, V., Petrović, J., Jovanović, P., Vulić, J., & Zarić, D. (2018). Enrichment of white chocolate with blackberry juice encapsulate: Impact on physical properties, sensory characteristics and polyphenol content. *LWT*, 92, 458–464. <https://doi.org/10.1016/j.lwt.2018.03.002>
- Lončarević, I., Pajin, B., Petrović, J., Nikolić, I., Maravić, N., Ačkar, Đ., Šubarić, D., Zarić, D., & Miličević, B. (2021). White Chocolate with Resistant Starch: Impact on Physical Properties, Dietary Fiber Content and Sensory Characteristics. *Molecules*, 26(19), 5908. <https://doi.org/10.3390/molecules26195908>
- Lončarević, I., Pajin, B., Tumbas Šaponjac, V., Petrović, J., Vulić, J., Fišteš, A., & Jovanović, P. (2019). Physical, sensorial and bioactive characteristics of white chocolate with encapsulated green tea extract. *Journal of the Science of Food and Agriculture*, 99(13), 5834–5841. <https://doi.org/10.1002/jsfa.9855>
- Magagna, F., Guglielmetti, A., Liberto, E., Reichenbach, S. E., Allegrucci, E., Gobino, G., Bicchi, C., & Cordero, C. (2017). Comprehensive Chemical Fingerprinting of High-Quality Cocoa at Early Stages of Processing: Effectiveness of Combined Untargeted and Targeted Approaches for

- Classification and Discrimination. *Journal of Agricultural and Food Chemistry*, 65(30), 6329–6341. <https://doi.org/10.1021/acs.jafc.7b02167>
- Mahajan, S., Singh, D., Sharma, R., Singh, G., & Bedi, N. (2021). PH-Independent Dissolution and Enhanced Oral Bioavailability of Aripiprazole-Loaded Solid Self-microemulsifying Drug Delivery System. *AAPS PharmSciTech*, 22(1), 24. <https://doi.org/10.1208/s12249-020-01882-y>
- Mahindrakar, K. V., & Rathod, V. K. (2020). Ultrasonic assisted aqueous extraction of catechin and gallic acid from *Syzygium cumini* seed kernel and evaluation of total phenolic, flavonoid contents and antioxidant activity. *Chemical Engineering and Processing - Process Intensification*, 149, 107841. <https://doi.org/10.1016/j.cep.2020.107841>
- Martínez-Ramos, T., Benedito-Fort, J., Watson, N. J., Ruiz-López, I. I., Che-Galicia, G., & Corona-Jiménez, E. (2020). Effect of solvent composition and its interaction with ultrasonic energy on the ultrasound-assisted extraction of phenolic compounds from Mango peels (*Mangifera indica* L.). *Food and Bioproducts Processing*, 122, 41–54. <https://doi.org/10.1016/j.fbp.2020.03.011>
- Massounga Bora, A. F., Ma, S., Li, X., & Liu, L. (2018). Application of microencapsulation for the safe delivery of green tea polyphenols in food systems: Review and recent advances. *Food Research International*, 105, 241–249. <https://doi.org/10.1016/j.foodres.2017.11.047>
- Masters, K. (1985). Spray drying handbook. *Spray Drying Handbook*. <https://www.cabdirect.org/cabdirect/abstract/19880428422>
- McGuire, R. G. (1992). Reporting of Objective Color Measurements. *HortScience*, 27(12), 1254–1255. <https://doi.org/10.21273/HORTSCI.27.12.1254>
- Medina-Torres, N., Ayora-Talavera, T., Espinosa-Andrews, H., Sánchez-Contreras, A., & Pacheco, N. (2017). Ultrasound Assisted Extraction for the Recovery of Phenolic Compounds from Vegetable Sources. *Agronomy*, 7(3), Article 3. <https://doi.org/10.3390/agronomy7030047>
- Mehta, C., & Patel, N. (1996). *SPSS exact tests*.
- Meier, B. P., Noll, S. W., & Molokwu, O. J. (2017). The sweet life: The effect of mindful chocolate consumption on mood. *Appetite*, 108, 21–27. <https://doi.org/10.1016/j.appet.2016.09.018>
- Meng, C. C., Jalil, A., & Ismail, A. (2009). Phenolic and Theobromine Contents of Commercial Dark, Milk and White Chocolates on the Malaysian Market. *Molecules*, 14(1), 200–209. <https://doi.org/10.3390/molecules14010200>
- Mishra, P., Mishra, S., & Mahanta, C. L. (2014). Effect of maltodextrin concentration and inlet temperature during spray drying on physicochemical and antioxidant properties of amla (*Embllica officinalis*) juice powder. *Food and Bioproducts Processing*, 92(3), 252–258. <https://doi.org/10.1016/j.fbp.2013.08.003>
- Mongia, G., & Ziegler, G. R. (2000). The role of particle size distribution of suspended solids in defining the flow properties of milk chocolate. *International Journal of Food Properties*, 3(1), 137–147. <https://doi.org/10.1080/10942910009524621>
- Muhammad, D. R. A., Saputro, A. D., Rottiers, H., Van de Walle, D., & Dewettinck, K. (2018). Physicochemical properties and antioxidant activities of chocolates enriched with engineered cinnamon nanoparticles.

- European Food Research and Technology*, 244(7), 1185–1202.
<https://doi.org/10.1007/s00217-018-3035-2>
- Muhammad, D. R. A., Tuentner, E., Patria, G. D., Foubert, K., Pieters, L., & Dewettinck, K. (2021). Phytochemical composition and antioxidant activity of *Cinnamomum burmannii* Blume extracts and their potential application in white chocolate. *Food Chemistry*, 340, 127983.
<https://doi.org/10.1016/j.foodchem.2020.127983>
- Munsel, A. H. (2009). X-Rite.
- Nambiar, R. B., Sellamuthu, P. S., & Perumal, A. B. (2017). Microencapsulation of Tender Coconut Water by Spray Drying: Effect of Moringa oleifera Gum, Maltodextrin Concentrations, and Inlet Temperature on Powder Qualities. *Food and Bioprocess Technology*, 10(9), 1668–1684.
<https://doi.org/10.1007/s11947-017-1934-z>
- Nidhin, M., Indumathy, R., Sreeram, K. J., & Nair, B. U. (2008). Synthesis of iron oxide nanoparticles of narrow size distribution on polysaccharide templates | SpringerLink. *Bulletin of Materials Science*, 93–96.
- Ningsih, N., Yasni, S., Departemen Ilmu dan Teknologi Pangan, Fakultas Teknologi Pertanian, Institut Pertanian Bogor, Bogor, Indonesia, Yuliani, S., & Balai Besar Penelitian dan Pengembangan Pascapanen Pertanian, Bogor, Indonesia. (2017). SINTESIS NANOPARTIKEL EKSTRAK KULIT MANGGIS MERAH DAN KAJIAN SIFAT FUNGSIONAL PRODUK ENKAPSULASINYA. *Jurnal Teknologi dan Industri Pangan*, 28(1), 27–35. <https://doi.org/10.6066/jtip.2017.28.1.27>
- Oroian, M., Ursachi, F., & Dranca, F. (2020). Influence of ultrasonic amplitude, temperature, time and solvent concentration on bioactive compounds extraction from propolis. *Ultrasonics Sonochemistry*, 64, 105021.
<https://doi.org/10.1016/j.ultsonch.2020.105021>
- Parisi, O. I., Puoci, F., Restuccia, D., Farina, G., Iemma, F., & Picci, N. (2014). Chapter 4 - Polyphenols and Their Formulations: Different Strategies to Overcome the Drawbacks Associated with Their Poor Stability and Bioavailability. Dalam R. R. Watson, V. R. Preedy, & S. Zibadi (Ed.), *Polyphenols in Human Health and Disease* (hlm. 29–45). Academic Press.
<https://doi.org/10.1016/B978-0-12-398456-2.00004-9>
- Pascua, Y., Koç, H., & Foegeding, E. A. (2013). Food structure: Roles of mechanical properties and oral processing in determining sensory texture of soft materials. *Current Opinion in Colloid & Interface Science*, 18(4), 324–333. <https://doi.org/10.1016/j.cocis.2013.03.009>
- Patel, K., Panchal, N., & Ingle, D. P. (2019). Review of Extraction Techniques. *International Journal of Advanced Research in Chemical Science*, 6(3), 6–21.
- Patel, M. B., & Mishra, S. (2011). Hypoglycemic activity of alkaloidal fraction of *Tinospora cordifolia*. *Phytomedicine*, 18(12), 1045–1052.
<https://doi.org/10.1016/j.phymed.2011.05.006>
- Pathare, P. B., Opara, U. L., & Al-Said, F. A.-J. (2013). Colour Measurement and Analysis in Fresh and Processed Foods: A Review. *Food and Bioprocess Technology*, 6(1), 36–60. <https://doi.org/10.1007/s11947-012-0867-9>
- Peters, R. J. B., Bouwmeester, H., Gottardo, S., Amenta, V., Arena, M., Brandhoff, P., Marvin, H. J. P., Mech, A., Moniz, F. B., Pesudo, L. Q., Rauscher, H.,

- Schoonjans, R., Undas, A. K., Vettori, M. V., Weigel, S., & Aschberger, K. (2016). Nanomaterials for products and application in agriculture, feed and food. *Trends in Food Science & Technology*, 54, 155–164. <https://doi.org/10.1016/j.tifs.2016.06.008>
- Phienweij, H., Swasdichira, I. si, Amnuoyopol, S., Pavasant, P., & Sumrejkanachakij, P. (2015). *Tinospora crispa* extract inhibits MMP-13 and migration of head and neck squamous cell carcinoma cell lines. *Asian Pacific Journal of Tropical Biomedicine*, 5(9), 738–743. <https://doi.org/10.1016/j.apjtb.2015.07.001>
- Popov-Raljić, J. V., & Lalić-Petronijević, J. G. (2009). Sensory Properties and Color Measurements of Dietary Chocolates with Different Compositions During Storage for Up to 360 Days. *Sensors*, 9(3), Article 3. <https://doi.org/10.3390/s90301996>
- Praman, S., Mulvany, M. J., Williams, D. E., Andersen, R. J., & Jansakul, C. (2013). Crude extract and purified components isolated from the stems of *Tinospora crispa* exhibit positive inotropic effects on the isolated left atrium of rats. *Journal of Ethnopharmacology*, 149(1), 123–132. <https://doi.org/10.1016/j.jep.2013.06.010>
- Priandana, K., S, A. Z., & Sukarman, S. (2016). Mobile Munsell Soil Color Chart Berbasis Android Menggunakan Histogram Ruang Citra HVC dengan Klasifikasi KNN. *Jurnal Ilmu Komputer dan Agri-Informatika*, 3(2), 93. <https://doi.org/10.29244/jika.3.2.93-101>
- Purnomo, W., Khasanah, L. U., & Anandito, B. K. (2016). Pengaruh Ratio Kombinasi Maltodekstrin, Karagenan dan Whey Terhadap Karakteristik Mikroenkapsulan Pewarna Alami Daun Jati (*Tectona Grandis* L. F.). *Jurnal Aplikasi Teknologi Pangan*, 3(3), Article 3. <https://jatp.ift.or.id/index.php/jatp/article/view/113>
- Qian, J., Li, Y., Gao, J., He, Z., & Yi, S. (2020). The effect of ultrasonic intensity on physicochemical properties of Chinese fir. *Ultrasonics Sonochemistry*, 64, 104985. <https://doi.org/10.1016/j.ultsonch.2020.104985>
- Quintanilla-Carvajal, M. X., Camacho-Díaz, B. H., Meraz-Torres, L. S., Chanona-Pérez, J. J., Alamilla-Beltrán, L., Jimenez-Aparicio, A., & Gutiérrez-López, G. F. (2010). Nanoencapsulation: A new trend in food engineering processing. *Food Engineering Reviews*, 2(1), 39–50. <https://doi.org/10.1007/s12393-009-9012-6>
- Rafsanjani, M. K., & Putri, W. D. R. (2015). Karakterisasi ekstrak kulit jeruk bali menggunakan metode ultrasonic bath (kajian perbedaan pelarut dan lama ekstraksi). *Jurnal Pangan dan Agroindustri*, 3(4), 1473–1480.
- Raj, R., Rahal, A., & Bharadwaj, M. (2020). Effect of feeding *Tinospora cordifolia* and *Mentha arvensis* on growth and nutrient utilization in crossbred calves. *JOURNAL OF ENTOMOLOGY AND ZOOLOGY STUDIES*, 9, 1682–1686.
- Ramakrishnan, Y., Adzahan, N. M., Yusof, Y. A., & Muhammad, K. (2018). Effect of wall materials on the spray drying efficiency, powder properties and stability of bioactive compounds in tamarillo juice microencapsulation. *Powder Technology*, 328, 406–414. <https://doi.org/10.1016/j.powtec.2017.12.018>
- Renate, D., Pratama, F., Yuliati, K., & Priyanto, G. (2014). Model Kinetika Degradasi Capsaicin Cabai Merah Giling pada Berbagai Kondisi Suhu

- Penyimpanan. *AgriTECH*, 34(3), Article 3.
<https://doi.org/10.22146/agritech.9462>
- Ribeiro, M. L. F. F., Roos, Y. H., Ribeiro, A. P. B., & Nicoletti, V. R. (2020). Effects of maltodextrin content in double-layer emulsion for production and storage of spray-dried carotenoid-rich microcapsules. *Food and Bioprocess Technology*, 124, 208–221.
<https://doi.org/10.1016/j.fbp.2020.09.004>
- Rosidah, I., Bahua, H., Mufidah, R., & Pongtuluran, O. B. (2015). Pengaruh Kondisi Proses Ekstraksi Batang Brotowali (*Tinospora crispa* (L.) Hook.f & Thomson) Terhadap Aktivitas Hambatan Enzim Alfa Glukosidase. *Media Penelitian dan Pengembangan Kesehatan*, 25(4), 203–210.
<https://doi.org/10.22435/mpk.v25i4.4586.203-210>
- Saloko, S., Purnama, D., Setiaji, B., & Pranoto, Y. (2012). STRUCTURAL ANALYSIS OF SPRAY-DRIED COCONUT SHELL LIQUID SMOKE POWDER [Analisis Struktural Bubuk Asap Cair Batok Kelapa Hasil Pengeringan Semprot]. *Jurnal Teknologi dan Industri Pangan*, 23, 173–179. <https://doi.org/10.6066/jtip.2012.23.2.173>
- Saloko, S., Purnama, D., Setiaji, B., Pranoto, Y., & Anal, A. (2013). Encapsulation of coconut shell liquid smoke in chitosan-maltodextrin based nanoparticles. *International Food Research Journal*, 20, 1269–1276.
- Saputro, A. D. (2017). *Structure-function relations of palm sap sigar in dark chocolate*. Ghent University.
- Saputro, A. D., Van de Walle, D., Kadivar, S., Bin Sintang, M. D., Van der Meeren, P., & Dewettinck, K. (2017). 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., Walle, D., Aidoo, R., Amofo Mensah, M., Delbaere, C., De Clercq, N., 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. <https://doi.org/10.1007/s00217-016-2734-9>
- Setyadi, P., Yoga, N. G., & Riyanta, T. A. (2020). ANALISA PENGUJIAN TERHADAP PROSES PEMBUATAN BUBUK DENGAN METODE SPRAY DRYER DENGAN CAMPURAN MALTODEXTRIN. *Prosiding Seminar Nasional NCIET*, 1(1), Article 1.
<https://doi.org/10.32497/nciet.v1i1.45>
- Shahidi, F., & Ambigaipalan, P. (2015). Phenolics and polyphenolics in foods, beverages and spices: Antioxidant activity and health effects – A review. *Journal of Functional Foods*, 18, 820–897.
<https://doi.org/10.1016/j.jff.2015.06.018>
- Sharma, H., Rao, P. S., & Singh, A. K. (2021). Fifty years of research on *Tinospora cordifolia*: From botanical plant to functional ingredient in foods. *Trends in Food Science & Technology*, 118, 189–206.
<https://doi.org/10.1016/j.tifs.2021.10.003>
- Sharma, H., Singh, A. K., Borad, S., & Deshwal, G. K. (2021). Processing stability and debittering of *Tinospora cordifolia* (giloy) juice using ultrasonication

- for potential application in foods. *LWT*, 139, 110584. <https://doi.org/10.1016/j.lwt.2020.110584>
- Sharma, P., Dwivedee, B. P., Bisht, D., Dash, A. K., & Kumar, D. (2019). The chemical constituents and diverse pharmacological importance of *Tinospora cordifolia*. *Heliyon*, 5(9), e02437. <https://doi.org/10.1016/j.heliyon.2019.e02437>
- Silva-Weiss, A., Bifani, V., Ihl, M., Sobral, P. J. A., & Gómez-Guillén, M. C. (2013). Structural properties of films and rheology of film-forming solutions based on chitosan and chitosan-starch blend enriched with murta leaf extract. *Food Hydrocolloids*, 31(2), 458–466. <https://doi.org/10.1016/j.foodhyd.2012.11.028>
- Sim, S. Y. J., Ng, J. W., Ng, W. K., Forde, C. G., & Henry, C. J. (2016). Plant polyphenols to enhance the nutritional and sensory properties of chocolates. *Food Chemistry*, 200, 46–54. <https://doi.org/10.1016/j.foodchem.2015.12.092>
- Sim, Y. Y., Jess Ong, W. T., & Nyam, K. L. (2019). Effect of various solvents on the pulsed ultrasonic assisted extraction of phenolic compounds from *Hibiscus cannabinus* L. leaves. *Industrial Crops and Products*, 140, 111708. <https://doi.org/10.1016/j.indcrop.2019.111708>
- Siró, I., Kápolna, E., Kápolna, B., & Lugasi, A. (2008). Functional food. Product development, marketing and consumer acceptance—A review. *Appetite*, 51(3), 456–467. <https://doi.org/10.1016/j.appet.2008.05.060>
- Sokmen, A., & Gunes, G. (2006). Influence of some bulk sweeteners on rheological properties of chocolate. *LWT - Food Science and Technology*, 39(10), 1053–1058. <https://doi.org/10.1016/j.lwt.2006.03.002>
- Soria, A. C., & Villamiel, M. (2010). Effect of ultrasound on the technological properties and bioactivity of food: A review. *Trends in Food Science & Technology*, 21(7), 323–331. <https://doi.org/10.1016/j.tifs.2010.04.003>
- Srihari, E., FSri Lingganingrum, F., Hervita, & Wijaya S., H. (2010). *PENGARUH PENAMBAHAN MALTODEKSTRIN PADA PEMBUATAN SANTAN KELAPA BUBUK*. 1–7. <http://eprints.undip.ac.id/22039/>
- 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>
- Suhaimi, S. H., Hasham, R., Hafiz Idris, M. K., Ismail, H. F., Mohd Ariffin, N. H., & Abdul Majid, F. A. (2019). Optimization of Ultrasound-Assisted Extraction Conditions Followed by Solid Phase Extraction Fractionation from *Orthosiphon stamineus* Benth (Lamiace) Leaves for Antiproliferative Effect on Prostate Cancer Cells. *Molecules*, 24(22), 4183. <https://doi.org/10.3390/molecules24224183>
- Talbot, G. (2008). Vegetable Fats. Dalam *Industrial Chocolate Manufacture and Use* (hlm. 415–433). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781444301588.ch19>
- Terry, P., Lagergren, J., Hansen, H., Wolk, A., & Nyrén, O. (2001). Fruit and vegetable consumption in the prevention of oesophageal and cardia cancers. *European Journal of Cancer Prevention: The Official Journal of the European Cancer Prevention Organisation (ECP)*, 10(4), 365–369. <https://doi.org/10.1097/00008469-200108000-00010>

- Tiwari, B. K. (2015). Ultrasound: A clean, green extraction technology. *TrAC Trends in Analytical Chemistry*, 71, 100–109. <https://doi.org/10.1016/j.trac.2015.04.013>
- Toker, O. S., Konar, N., Palabiyik, I., Rasouli Pirouzian, H., Oba, S., Polat, D. G., Poyrazoglu, E. S., & Sagdic, O. (2018). Formulation of dark chocolate as a carrier to deliver eicosapentaenoic and docosahexaenoic acids: Effects on product quality. *Food Chemistry*, 254, 224–231. <https://doi.org/10.1016/j.foodchem.2018.02.019>
- Toker, O. S., Konar, N., Pirouzian, H. R., Oba, S., Polat, D. G., Palabiyik, I., Poyrazoglu, E. S., & Sagdic, O. (2018). Developing functional white chocolate by incorporating different forms of EPA and DHA - Effects on product quality. *LWT*, 87, 177–185. <https://doi.org/10.1016/j.lwt.2017.08.087>
- Tolstoguzov, V. (2003). Some thermodynamic considerations in food formulation. *Food Hydrocolloids*, 17(1), 1–23. [https://doi.org/10.1016/S0268-005X\(01\)00111-4](https://doi.org/10.1016/S0268-005X(01)00111-4)
- Tontul, I., & Topuz, A. (2017). Spray-drying of fruit and vegetable juices: Effect of drying conditions on the product yield and physical properties. *Trends in Food Science & Technology*, 63, 91–102. <https://doi.org/10.1016/j.tifs.2017.03.009>
- Torun, M., Dincer, C., Topuz, A., Sahin–Nadeem, H., & Ozdemir, F. (2015). Aqueous extraction kinetics of soluble solids, phenolics and flavonoids from sage (*Salvia fruticosa* Miller) leaves. *Journal of Food Science and Technology*, 52(5), 2797–2805. <https://doi.org/10.1007/s13197-014-1308-8>
- Ulfa, A. N. (2018). *PENGARUH KADAR PVP K30 TERHADAP MUTU FISIK TABLET EKSTRAK BATANG BROTOWALI (*Tinospora crispa* L.)* [Undergraduate, University of Muhammadiyah Malang]. <https://eprints.umm.ac.id/39968/>
- Upreti, P., & Chauhan, R. S. (2018). Effect of leaf powder of giloy (*Tinospora cordifolia*) in fish feed on survival and growth of post larvae of Catla catla. *Journal of Applied and Natural Science*, 10(1), Article 1. <https://doi.org/10.31018/jans.v10i1.1594>
- Valenzuela, C., & Aguilera, J. M. (2015). Effects of maltodextrin on hygroscopicity and crispness of apple leathers. *Journal of Food Engineering*, 144, 1–9. <https://doi.org/10.1016/j.jfoodeng.2014.07.010>
- Vieira, G. S., Cavalcanti, R. N., Meireles, M. A. A., & Hubinger, M. D. (2013). Chemical and economic evaluation of natural antioxidant extracts obtained by ultrasound-assisted and agitated bed extraction from jussara pulp (*Euterpe edulis*). *Journal of Food Engineering*, 119(2), 196–204. <https://doi.org/10.1016/j.jfoodeng.2013.05.030>
- Viuda-Martos, M., Ruiz-Navajas, Y., Fernández-López, J., & Pérez-Álvarez, J. A. (2010). Spices as Functional Foods. *Critical Reviews in Food Science and Nutrition*, 51(1), 13–28. <https://doi.org/10.1080/10408390903044271>
- Wahyudi, T., Panggabean, T. R., & Pujiyanto. (2008). *Panduan Lengkap Kakao Manajemen Agribisnis dari Hulu hingga Hilir*. Penebar Swadaya.
- Watson, M. A., Lea, J. M., & Bett-Garber, K. L. (2017). Spray drying of pomegranate juice using maltodextrin/cyclodextrin blends as the wall

- material. *Food Science & Nutrition*, 5(3), 820–826.
<https://doi.org/10.1002/fsn3.467>
- Widyasanti, A., Halimah, T., & Rohdiana, D. (2018). Ekstraksi Teh Putih Berbantu Ultrasonik pada Berbagai Amplitudo. *Jurnal Aplikasi Teknologi Pangan*, 7(3). <https://ejournal2.undip.ac.id/index.php/jatp/article/view/2295>
- Yanus, R. L., Sela, H., Borojovich, E. J. C., Zakon, Y., Saphier, M., Nikolski, A., Gutflais, E., Lorber, A., & Karpas, Z. (2014). Trace elements in cocoa solids and chocolate: An ICPMS study. *Talanta*, 119, 1–4.
<https://doi.org/10.1016/j.talanta.2013.10.048>
- Yates, P. (2009). 3—Formulation of chocolate for industrial applications. Dalam G. Talbot (Ed.), *Science and Technology of Enrobed and Filled Chocolate, Confectionery and Bakery Products* (hlm. 29–52). Woodhead Publishing.
<https://doi.org/10.1533/9781845696436.1.29>
- Yinbin, L., Wu, L., Weng, M., Tang, B., Lai, P., & Chen, J. (2018). Effect of different encapsulating agent combinations on physicochemical properties and stability of microcapsules loaded with phenolics of plum (*Prunus salicina* lindl.). *Powder Technology*, 340, 459–464.
<https://doi.org/10.1016/j.powtec.2018.09.049>
- Yogaswara, I. B., Wartini, N. M., & Wrasati, L. P. (2017). KARAKTERISTIK ENKAPSULAT EKSTRAK PEWARNA BUAH PANDAN (*Pandanus tectorius*) PADA PERLAKUAN ENKAPSULAN GELATIN DAN MALTODEKSTRIN. *JURNAL REKAYASA DAN MANAJEMEN AGROINDUSTRI*, 5(4), Article 4.
- Yuan, Y., Gao, Y., Zhao, J., & Mao, L. (2008). Characterization and stability evaluation of β -carotene nanoemulsions prepared by high pressure homogenization under various emulsifying conditions. *Food Research International*, 41(1), 61–68. <https://doi.org/10.1016/j.foodres.2007.09.006>
- Yusoff, I. M., Mat Taher, Z., Rahmat, Z., & Chua, L. S. (2022). A review of ultrasound-assisted extraction for plant bioactive compounds: Phenolics, flavonoids, thymols, saponins and proteins. *Food Research International*, 157, 111268. <https://doi.org/10.1016/j.foodres.2022.111268>
- Zhang, C., Ada Khoo, S. L., Chen, X. D., & Quek, S. Y. (2020). Microencapsulation of fermented noni juice via micro-fluidic-jet spray drying: Evaluation of powder properties and functionalities. *Powder Technology*, 361, 995–1005.
<https://doi.org/10.1016/j.powtec.2019.10.098>
- Zheng, M., Jin, Z., & Zhang, Y. (2007). Effect of cross-linking and esterification on hygroscopicity and surface activity of cassava maltodextrins. *Food Chemistry*, 103(4), 1375–1379.
<https://doi.org/10.1016/j.foodchem.2006.10.053>
- Ziegler, G. R., Mongia, G., & Hollender, R. (2001). The Role of Particle Size Distribution of Suspended Solids in Defining the Sensory Properties of Milk Chocolate. *International Journal of Food Properties*, 4(2), 353–370.
<https://doi.org/10.1081/JFP-100105199>
- Zorzenon, M. R. T., Formigoni, M., da Silva, S. B., Hodas, F., Piovan, S., Ciotta, S. R., Jansen, C. A., Dacome, A. S., Pilau, E. J., Mareze-Costa, C. E., Milani, P. G., & Costa, S. C. (2020). Spray drying encapsulation of stevia extract with maltodextrin and evaluation of the physicochemical and

- functional properties of produced powders. *Journal of Food Science*, 85(10), 3590–3600. <https://doi.org/10.1111/1750-3841.15437>
- Zuidam, N. J., & Shimoni, E. (2010). Overview of Microencapsulates for Use in Food Products or Processes and Methods to Make Them. Dalam N. J. Zuidam & V. Nedovic (Ed.), *Encapsulation Technologies for Active Food Ingredients and Food Processing* (hlm. 3–29). Springer. https://doi.org/10.1007/978-1-4419-1008-0_2
- 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>
- Żyżelewicz, D., Krysiak, W., Nebesny, E., & Budryn, G. (2014). Application of various methods for determination of the color of cocoa beans roasted under variable process parameters. *European Food Research and Technology*, 238(4), 549–563. <https://doi.org/10.1007/s00217-013-2123-6>
- Żyżelewicz, D., Krysiak, W., Oracz, J., Sosnowska, D., Budryn, G., & Nebesny, E. (2016). The influence of the roasting process conditions on the polyphenol content in cocoa beans, nibs and chocolates. *Food Research International*, 89, 918–929. <https://doi.org/10.1016/j.foodres.2016.03.026>