



## BIBLIOGRAPHY

- Afoakwah, N. A. *et al.* (2023) 'Quality evaluation of orange-fleshed sweet potato-pineapple blended jam', *Journal of Agriculture and Food Research*, 12. doi: 10.1016/j.jafr.2023.100540.
- Aranguren, M. I. and Marcovich, N. E. (2023) 'How recent approaches to improve the nutritional quality of chocolate affect processing and consumer acceptance', *Current Opinion in Food Science*, 50, p. 100988.
- Assad-Bustillos, M. *et al.* (2020) 'Impact of protein reinforcement on the deformation of soft cereal foods under chewing conditions studied by X-ray tomography and finite element modelling', *Journal of Food Engineering*, 286(January). doi: 10.1016/j.jfoodeng.2020.110108.
- Badan Standarisasi Nasional (2014) 'Cokelat dan Produk-Produk Cokelat', *Sni 7934:2014*, 22(2), p. 23.
- Beckett, S. T. (2017) *Beckett's industrial chocolate manufacture and use (5th, Ed.)*, Willey Blackwell. doi: 10.1088/1751-8113/44/8/085201.
- Bhoosreddy, A. R. and Sakhavalkar, P. U. (2014) 'Image deteriorating factors in cone beam computed tomography, their classification, and measures to reduce them: A pictorial essay', *Journal of Indian Academy of Oral Medicine and Radiology*, 26(3), pp. 293–297. doi: 10.4103/0972-1363.145009.
- Briones, V. and Aguilera, J. M. (2005) 'Image analysis of changes in surface color of chocolate', *Food Research International*, pp. 87–94. doi: 10.1016/j.foodres.2004.09.002.
- Cancelliere, N. M. *et al.* (2023) 'The butterfly effect: improving brain cone-beam CT image artifacts for stroke assessment using a novel dual-axis trajectory', *Journal of NeuroInterventional Surgery*, 15(3), pp. 283–287. doi: 10.1136/neurintsurg-2021-018553.
- Chakrabarti-Bell, S. *et al.* (2021) 'Flour Quality effects on percolation of gas bubbles in wheat flour doughs', *Innovative Food Science and Emerging Technologies*. Elsevier Ltd, 74(April), p. 102841. doi: 10.1016/j.ifset.2021.102841.
- Charrondiere, U. R., Haytowitz, D. and Stadlmayr, B. (2012) 'Density Databases', *Food and Agricultural Organization*, pp. 1–24. Available at: <https://www.fao.org/3/ap815e/ap815e.pdf>.
- Collazos-Escobar G.A., Gutiérrez-Guzmán N., V.-H. H. A. & A.-C. C. M. (2020) 'Water dynamics adsorption properties of dried and roasted cocoa beans ( *theobroma cacao* L. )', *International Journal of Food Properties*. Taylor & Francis, 23(1), pp. 434–444. doi: 10.1080/10942912.2020.1732408.
- Cornish, A. (2019) 'X-ray CT imaging of food', *Food Science and Technology*. Food Science and Technology, 33(3), pp. 30–33. doi: 10.1002/fsat.3303\_8.x.
- Dahlenborg, H. *et al.* (2012) 'Study of the porous structure of white chocolate by confocal Raman microscopy', *European Journal of Lipid Science and Technology*, 114(8), pp. 919–926. doi: 10.1002/ejlt.201200006.



- Dahlenborg, H., Millqvist-Fureby, A. and Bergenståhl, B. (2015) 'Effect of shell microstructure on oil migration and fat bloom development in model pralines', *Food Structure*, 5, pp. 51–65. doi: 10.1016/j.foostr.2015.06.002.
- van Dalen, G. (2012) 'A Study of Bubbles in Foods by X-Ray Microtomography and Image Analysis', *Microscopy and Analysis*, 26(2), pp. S8–S12.
- Davis, J. P. *et al.* (2013) 'Refractive index and density measurements of peanut oil for determining oleic and linoleic acid contents', *JAOCS, Journal of the American Oil Chemists' Society*, 90(2), pp. 199–206. doi: 10.1007/s11746-012-2153-4.
- Dilsad, H. *et al.* (2024) 'Microstructural and rheological influence of different strategies to mitigate oil migration in chocolate pralines during storage in limiting conditions', *LWT*. Elsevier Ltd, 208(August), p. 116672. doi: 10.1016/j.lwt.2024.116672.
- Du, C. J. and Sun, D. W. (2004) 'Recent developments in the applications of image processing techniques for food quality evaluation', *Trends in Food Science and Technology*, 15(5), pp. 230–249. doi: 10.1016/j.tifs.2003.10.006.
- Du, Z. *et al.* (2019) 'X-ray computed tomography for quality inspection of agricultural products: A review', *Food Science and Nutrition*, 7(10), pp. 3146–3160. doi: 10.1002/fsn3.1179.
- Van Dyck, T. *et al.* (2014) 'Characterisation of structural patterns in bread as evaluated by X-ray computer tomography', *Journal of Food Engineering*. Elsevier Ltd, 123, pp. 67–77. doi: 10.1016/j.jfoodeng.2013.09.017.
- EU (2000) 'EU Directive 2000/36/EC of the European Parliament and of the Council of 23 June 2000 relating to cocoa and chocolate products intended for human consumption', *Official Journal of the European Communities*, L197, pp. 19–25.
- Fernandes Almeida, R. *et al.* (2024) 'Chocolates, compounds and spreads: A review on the use of oleogels, hydrogels and hybrid gels to reduce saturated fat content', *Food Research International*, 178(October 2023). doi: 10.1016/j.foodres.2024.113986.
- Firmansyah, Y. A., Saputro, A. D. and Nugraha, B. (2025) 'Detection and characterization of praline chocolates with wet-based and fat-based fillings using X-ray CT images', *IOP Conference Series: Earth and Environmental Science*, 1460(1), p. 012037. doi: 10.1088/1755-1315/1460/1/012037.
- Franke, K. *et al.* (2022) 'Alcohol in praline fillings influences the water migration within the surrounding chocolate shell', *Journal of Food Engineering*. Elsevier Ltd, 315(August 2021), p. 110805. doi: 10.1016/j.jfoodeng.2021.110805.
- Frisullo, P. *et al.* (2010) 'Microstructural characterization of multiphase chocolate using X-Ray microtomography', *Journal of Food Science*, 75(7). doi: 10.1111/j.1750-3841.2010.01745.x.
- Germishuys, Z. and Manley, M. (2021) 'X-ray micro-computed tomography evaluation of bubble structure of freeze-dried dough and foam properties of bread produced from roasted wheat flour', *Innovative Food Science and Emerging Technologies*, 73(June). doi: 10.1016/j.ifset.2021.102766.
- Ghorghi, Z. B. *et al.* (2023) 'Fabrication of novel hybrid gel based on beeswax oleogel: Application in the compound chocolate formulation', *Food Hydrocolloids*,

- 140(August 2022). doi: 10.1016/j.foodhyd.2023.108599.
- Glicerina, V. *et al.* (2015) 'Effect of manufacturing process on the microstructural and rheological properties of milk chocolate', *Journal of Food Engineering*. Elsevier Ltd, 145, pp. 45–50. doi: 10.1016/j.jfoodeng.2014.06.039.
- Guo, E. *et al.* (2018) 'Revealing the microstructural stability of a three-phase soft solid (ice cream) by 4D synchrotron X-ray tomography', *Journal of Food Engineering*. Elsevier, 237(May), pp. 204–214. doi: 10.1016/j.jfoodeng.2018.05.027.
- Haedelt, J., Beckett, S. T. and Niranjana, K. (2007) 'Bubble-included chocolate: Relating structure with sensory response', *Journal of Food Science*. Journal of Food Science, 72(3), pp. 138–142. doi: 10.1111/j.1750-3841.2007.00313.x.
- Hsieh, J. (1998) 'Adaptive streak artifact reduction in computed tomography resulting from excessive x-ray photon noise', *Medical Physics*, 25(11), pp. 2139–2147. doi: 10.1118/1.598410.
- Hsieh, J. (2009) *Computed tomography : principles, design, artifacts, and recent advances 2nd ed.* United States of America: SPIE and John Wiley & Sons, Inc.
- Johnstone, A. H. (1991) 'CRC Handbook of Chemistry and Physics—69th Edition Editor in Chief R. C. Weast, CRC Press Inc., Boca Raton, Florida, 1988, pp. 2400, price £57.50. ISBN 0–8493–0369–5', *Journal of Chemical Technology & Biotechnology*, 50(2), pp. 294–295. doi: 10.1002/jctb.280500215.
- Karant, S. *et al.* (2023) 'Linking microbial contamination to food spoilage and food waste: the role of smart packaging, spoilage risk assessments, and date labeling', *Frontiers in Microbiology*, 14(June), pp. 1–17. doi: 10.3389/fmicb.2023.1198124.
- Kelkar, S., Boushey, C. J. and Okos, M. (2015) 'A method to determine the density of foods using X-ray imaging', *Journal of Food Engineering*. Elsevier Ltd, 159, pp. 36–41. doi: 10.1016/j.jfoodeng.2015.03.012.
- Koksel, F. *et al.* (2016) 'The bubble size distribution and its evolution in non-yeasted wheat flour doughs investigated by synchrotron X-ray microtomography', *Food Research International*. Elsevier Ltd, 80, pp. 12–18. doi: 10.1016/j.foodres.2015.12.005.
- Konar, N. *et al.* (2024) 'Chocolate microstructure: A comprehensive review', *Food Research International*, p. 115091. Available at: <https://linkinghub.elsevier.com/retrieve/pii/S096399692401161X>.
- Liang, B. and Hartel, R. W. (2004) 'Effects of milk powders in milk chocolate', *Journal of Dairy Science*, pp. 20–31. doi: 10.3168/jds.S0022-0302(04)73137-9.
- Lim, K. S. and Barigou, M. (2004) 'X-ray micro-computed tomography of cellular food products', *Food Research International*, 37(10), pp. 1001–1012. doi: 10.1016/j.foodres.2004.06.010.
- Lorenzo, J. M. *et al.* (2018) *Main groups of microorganisms of relevance for food safety and stability: General aspects and overall description, Innovative technologies for food preservation: Inactivation of spoilage and pathogenic microorganisms*. Elsevier Inc. doi: 10.1016/B978-0-12-811031-7.00003-0.
- Mafe, A. N. *et al.* (2024) 'A review on food spoilage mechanisms, food borne diseases and commercial aspects of food preservation and processing', *Food Chemistry*



- Advances*. Elsevier Ltd, 5(November). doi: 10.1016/j.focha.2024.100852.
- Marvig, C. L. *et al.* (2014) 'Identification and characterisation of organisms associated with chocolate pralines and sugar syrups used for their production', *International Journal of Food Microbiology*. Elsevier B.V., 185, pp. 167–176. doi: 10.1016/j.ijfoodmicro.2014.05.017.
- Marwati, T. *et al.* (2024) 'Alternative fermentation method of cocoa beans: The use of *Lactiplantibacillus plantarum* subsp. *plantarum* HL-15 as starter culture and valorization of cocoa pulp by-product', *Journal of Agriculture and Food Research*. Elsevier B.V., 18(September), p. 101398. doi: 10.1016/j.jafr.2024.101398.
- Mokbul, M., Cheow, Y. L. and 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(November). doi: 10.1016/j.focha.2023.100515.
- Mougang, N. N. *et al.* (2024) 'Influence of fermentation time, drying time and temperature on cocoa pods (*Theobroma cacao* L.) marketability', *Applied Food Research*. Elsevier B.V., 4(2), p. 100460. doi: 10.1016/j.afres.2024.100460.
- Nugraha, B. *et al.* (2019) 'Non-destructive porosity mapping of fruit and vegetables using X-ray CT', *Postharvest Biology and Technology*, 150(November 2018), pp. 80–88. doi: 10.1016/j.postharvbio.2018.12.016.
- Nugraha, B. *et al.* (2021) 'Oxygen diffusivity mapping of fruit and vegetables based on X-ray CT', *Journal of Food Engineering*, 306(April). doi: 10.1016/j.jfoodeng.2021.110640.
- Ong, L. *et al.* (2011) 'Microstructure of milk gel and cheese curd observed using cryo scanning electron microscopy and confocal microscopy', *Lwt*, 44(5), pp. 1291–1302. doi: 10.1016/j.lwt.2010.12.026.
- Onyibe, P. N. *et al.* (2021) 'Effects of vernonia amygdalina fractionate on glutathione reductase and glutathione-S-transferase on alloxan induced diabetes wistar rat', *Biocatalysis and Agricultural Biotechnology*. Elsevier Ltd, 36(August), p. 102118. doi: 10.1016/j.bcab.2021.102118.
- Pareyt, B. *et al.* (2009) 'The role of sugar and fat in sugar-snap cookies: Structural and textural properties', *Journal of Food Engineering*, 90(3), pp. 400–408. doi: 10.1016/j.jfoodeng.2008.07.010.
- Priyanti, D. *et al.* (2023) 'X-ray CT applications to reveal physical defects of onion during storage', *BIO Web of Conferences*, 80, pp. 0–4. doi: 10.1051/bioconf/20238004008.
- Prosapio, V. and Norton, I. T. (2019) 'Development of fat-reduced chocolate by using water-in-cocoa butter emulsions', *Journal of Food Engineering*, pp. 165–170. doi: 10.1016/j.jfoodeng.2019.06.018.
- Rahmah, A. N. F. *et al.* (2023) 'The Effect of Different Storage Temperatures and Internal Analysis of Onions with X-Ray CT on The Respiration Rate of Onions', *E3S Web of Conferences*, 425. doi: 10.1051/e3sconf/202342501008.
- Reinke, S. K. *et al.* (2016) 'Synchrotron X-Ray microtomography reveals interior



- microstructure of multicomponent food materials such as chocolate', *Journal of Food Engineering*, 174, pp. 37–46. doi: 10.1016/j.jfoodeng.2015.11.012.
- Roda, R. S. (2018) 'Can Use of Cone Beam Computed Tomography Have an Effect on Endodontic Treatment?', *Journal of the California Dental Association*, 46(4), pp. 237–246. doi: 10.1080/19424396.2018.12222013.
- Russ, J. C. (2015) 'Image Analysis of Foods', *Journal of Food Science*, 80(9), pp. 1974–1987. doi: 10.1111/1750-3841.12987.
- Saputro, A. D., Van de Walle, D., Kadivar, S., *et al.* (2017a) 'Investigating the rheological, microstructural and textural properties of chocolates sweetened with palm sap-based sugar by partial replacement', *European Food Research and Technology*. Springer Berlin Heidelberg, 243(10), pp. 1729–1738. doi: 10.1007/s00217-017-2877-3.
- Saputro, A. D., Van de Walle, D., Kadivar, S., *et al.* (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), pp. 1729–1738. doi: 10.1007/s00217-017-2877-3.
- Saputro, A. D., Van de Walle, D., Aidoo, R. P., *et al.* (2017) 'Quality attributes of dark chocolates formulated with palm sap-based sugar as nutritious and natural alternative sweetener', *European Food Research and Technology*. Springer Berlin Heidelberg, 243(2), pp. 177–191. doi: 10.1007/s00217-016-2734-9.
- Saputro, A. D. *et al.* (2019) 'Rheological behaviour and microstructural properties of dark chocolate produced by combination of a ball mill and a liquefier device as small scale chocolate production system', *Lwt*, 100(September 2018), pp. 10–19. doi: 10.1016/j.lwt.2018.10.039.
- Sarfarazi, M. *et al.* (2024) 'Sugar-free aerated chocolate: Production, investigation of bubble features using X-ray computed tomography and image processing', *Journal of Food Science*, 89(1), pp. 473–493. doi: 10.1111/1750-3841.16861.
- Schoeman, L. *et al.* (2016) 'X-ray micro-computed tomography ( $\mu$ CT) for non-destructive characterisation of food microstructure', *Trends in Food Science and Technology*. Elsevier Ltd, 47, pp. 10–24. doi: 10.1016/j.tifs.2015.10.016.
- Schott, F. *et al.* (2023) 'Structural formation during bread baking in a combined microwave-convective oven determined by sub-second in-situ synchrotron X-ray microtomography', *Food Research International*, 173(March). doi: 10.1016/j.foodres.2023.113283.
- Shen, L. *et al.* (2023) 'Effects of sucrose particle size on the microstructure and bloom behavior of chocolate model systems', *Food Structure*, 36(March). doi: 10.1016/j.foostr.2023.100323.
- Shou, Y. D., Zhao, Z. and Zhou, X. P. (2020) 'Sensitivity analysis of segmentation techniques and voxel resolution on rock physical properties by X-ray imaging', *Journal of Structural Geology*. Elsevier Ltd, 133(January), p. 103978. doi: 10.1016/j.jsg.2020.103978.
- Silva, A. R. de A. *et al.* (2017) 'Impact of sustainability labeling in the perception of sensory quality and purchase intention of chocolate consumers', *Journal of*



- Cleaner Production*, 141, pp. 11–21. doi: 10.1016/j.jclepro.2016.09.024.
- Sonwai, S., Kaphueakngam, P. and Flood, A. (2014) ‘Blending of mango kernel fat and palm oil mid-fraction to obtain cocoa butter equivalent’, *Journal of Food Science and Technology*, 51(10), pp. 2357–2369. doi: 10.1007/s13197-012-0808-7.
- Subbarayudu, S., Namasivayam, S. K. R. and Arockiaraj, J. (2024) ‘Immunomodulation in Non-traditional Therapies for Methicillin-resistant Staphylococcus aureus (MRSA) Management’, *Current Microbiology*. Springer US, 81(10), pp. 1–28. doi: 10.1007/s00284-024-03875-7.
- Suryani, E., Susanto, W. H. and Wijayanti, N. (2016) ‘Physical and Chemical Characteristic of Peanut Oil (*Arachis hypogaea*) After Bleaching (Study Adsorbent Combination and Process Time)’, *Jurnal Pangan dan Agroindustri*, 4(1), pp. 120–126.
- Svanberg, L. *et al.* (2011) ‘Effect of Pre-Crystallization Process and Solid Particle Addition on Cocoa Butter Crystallization and Resulting Microstructure in Chocolate Model Systems’, *Procedia Food Science*. Elsevier Srl, 1, pp. 1910–1917. doi: 10.1016/j.profoo.2011.09.281.
- Torres, J. D. *et al.* (2024) ‘Relationship between microstructure formation and in vitro starch digestibility in baked gluten-starch matrices’, *Food Chemistry: X*. doi: 10.1016/j.fochx.2024.101347.
- Vicent, V. *et al.* (2017) ‘A new method developed to characterize the 3D microstructure of frozen apple using X-ray micro-CT’, *Journal of Food Engineering*. Elsevier Ltd, 212, pp. 154–164. doi: 10.1016/j.jfoodeng.2017.05.028.
- Vivar-Vera, G. *et al.* (2008) ‘Chonching - Rheological and structural changes of chocolate mass’, *Deutsche Lebensmittel-Rundschau*, 104(8), pp. 376–382.
- Wang, B., Chen, L. L. and Cheng, J. (2018) ‘New result on maximum entropy threshold image segmentation based on P system’, *Optik*. Elsevier GmbH., 163, pp. 81–85. doi: 10.1016/j.ijleo.2018.02.062.
- Wang, Z. *et al.* (2018) ‘Visualizing 3D Food Microstructure Using Tomographic Methods: Advantages and Disadvantages’, *Annual Review of Food Science and Technology*, 9, pp. 323–343. doi: 10.1146/annurev-food-030117-012639.
- Wong, K. Y. *et al.* (2024) ‘Effect of alternative sweetener and carbohydrate polymer mixtures on the physical properties, melting and crystallization behaviour of dark compound chocolate’, *Food Chemistry*. Elsevier Ltd, 431(February 2023), p. 137118. doi: 10.1016/j.foodchem.2023.137118.
- Wulandari, N. *et al.* (2011) ‘Sifat Fisik Minyak Sawit Kasar dan Korelasinya dengan Atribut Mutu’, *J. Teknol. dan Industri Pangan*, pp. 177–183.
- Ye, X. *et al.* (2023) ‘Effects of individual phospholipids on chocolate model systems: Particulate interaction, crystallization behavior, and fat bloom during storage’, *Journal of Food Engineering*, 357(March). doi: 10.1016/j.jfoodeng.2023.111618.