DAFTAR PUSTAKA

Abdul Rahman, M. N., Masawal, V. V., Qing Yii, R. Y., Narudin, N., Kobun, R., Muhammad, N. H., Chen Ng, E. Y., & Artasasta, Muh. A. (2025). Innovative Development of Instant Kombucha Drink and Kombucha Ice Cream Using Spray Drying Techniques. *International Journal of Advanced Research in Food Science and Agriculture Technology*, *3*(1), 1–23. https://doi.org/10.37934/fsat.3.1.123a

Abdullah, Z., Taip, F. S., Kamal, S. M. M., & Abdul Rahman, R. Z. (2020). Nonlinear model-based inferential control of moisture content of spray dried coconut milk. *Foods*, *9*(9). https://doi.org/10.3390/foods9091177

Adawiyah, R., Zhafirah, N., Donaretsi, O. N., Utami, P. N., Fatimah, S., Pratiwi, S., & Hakim, A. R. (2025). Litteratur Review: Profil Fitokimia dan Aktivitas Farmakologi dari Temulawak (Curcuma xanthorrhiza). *Jurnal Surya Medika*, *11*(2), 294–299. https://doi.org/10.33084/jsm.v11i2.10583

Agustinisari, I., Mulia, K., Harimurti, N., Nasikin, M., Rienoviar, Herawati, H., & Manalu, L. P. (2024). The Potency of Maillard Conjugates Containing Whey Protein as Natural Emulsifier. *International Journal of Food Science*, *2024*. https://doi.org/10.1155/2024/3254132

Alam, M., Sid, S., Giri, S., Das, R., Kishore, A., & Kumar, N. (2025). Encapsulated kinnow peel powder using freeze drying: Effect of maltodextrin and gum arabic concentrations on physiochemical, functional and thermal properties. *Food and Humanity*, *4*. https://doi.org/10.1016/j.foohum.2025.100546

Al-Hamayda, A., Abu-Jdayil, B., Ayash, M., & Tannous, J. (2023). Advances in microencapsulation techniques using Arabic gum: A comprehensive review. *Industrial Crops and Products*, *205*. https://doi.org/10.1016/j.indcrop.2023.117556

Ali, A., Chong, C. H., Mah, S. H., Abdullah, L. C., Choong, T. S. Y., & Chua, B. L. (2018). Impact of storage conditions on the stability of predominant phenolic constituents and antioxidant activity of dried piper betle extracts. *Molecules*, *23*(2). https://doi.org/10.3390/molecules23020484

Anand, V., Ksh, V., Kar, A., Varghese, E., Vasudev, S., & Kaur, C. (2024). Encapsulation efficiency and fatty acid analysis of chia seed oil microencapsulated by freeze-drying using combinations of wall material. *Food Chemistry*, *430*. https://doi.org/10.1016/j.foodchem.2023.136960

Antoniewicz, J., Kochman, J., Jakubczyk, K., & Janda-Milczarek, K. (2021). The influence of time and storage conditions on the antioxidant potential and total phenolic content in homemade grape vinegars. *Molecules*, *26*(24). https://doi.org/10.3390/molecules26247616

Arıkan, M., Mitchell, A. L., Finn, R. D., & Gürel, F. (2020). Microbial composition of Kombucha determined using amplicon sequencing and shotgun metagenomics. *Journal of Food Science*, *85*(2), 455–464. https://doi.org/10.1111/1750-3841.14992

Aung, T., & Eun, J. B. (2022). Impact of time and temperature on the physicochemical, microbiological, and nutraceutical properties of laver kombucha (Porphyra dentata) during fermentation. *LWT*, *154*(3). https://doi.org/10.1016/j.lwt.2021.112643

Awin, T., Buzgaia, N., Abd Ghafar, S. Z., Mediani, A., Mohd Faudzi, S. M., Maulidiani, M., Shaari, K., & Abas, F. (2019). Identification of nitric oxide inhibitory compounds from the rhizome of Curcuma xanthorrhiza. *Food Bioscience*, *29*, 126–134. https://doi.org/10.1016/j.fbio.2019.04.009

Baniasadi, M., Azizkhani, M., Erik Joakim Saris, P., & Tooryan, F. (2022). Comparative antioxidant potential of kefir and yogurt of bovine and non-bovine origins. *J Food Sci Technol*, *59*(4), 1307–1316. https://doi.org/10.1007/s13197

Banožić, M., Krzywonos, M., Aladić, K., Pińkowska, H., Mucha, I., Złocińska, A., & Jokić, S. (2023). Physicochemical, structural characterization and evaluation of encapsulated hesperidin from natural sources: Comparison of two encapsulation techniques; spray drying and freeze drying. *Journal of Drug Delivery Science and Technology*, *90*. https://doi.org/10.1016/j.jddst.2023.105098

Barańska-Dołomisiewicz, A., Żubernik, J., Samborska, K., Jedlińska, A., & Witrowa-Rajchert, D. (2025). Effects of Spray-Drying Conditions on the Functional and Physicochemical Properties of Young Barley Grass Juice Powders. *Foods*, *14*(10). https://doi.org/10.3390/foods14101663

Baysan, U., Zungur Bastıoğlu, A., Coşkun, N. Ö., Konuk Takma, D., Ülkeryıldız Balçık, E., Sahin-Nadeem, H., & Koç, M. (2021). The effect of coating material combination and encapsulation method on propolis powder properties. *Powder Technology*, *384*, 332–341. https://doi.org/10.1016/j.powtec.2021.02.018

Best Practices for Commercial Kombucha Brewers. (n.d.).

Bishop, P., Pitts, E. R., Budner, D., & Thompson-Witrick, K. A. (2022a). Chemical Composition of Kombucha. In *Beverages* (Vol. 8, Number 3). MDPI. https://doi.org/10.3390/beverages8030045

Bishop, P., Pitts, E. R., Budner, D., & Thompson-Witrick, K. A. (2022b). Kombucha: Biochemical and microbiological impacts on the chemical and flavor profile. In *Food Chemistry Advances* (Vol. 1). Elsevier Ltd. https://doi.org/10.1016/j.focha.2022.100025

Both, E. M., Boom, R. M., & Schutyser, M. A. I. (2020). Particle morphology and powder properties during spray drying of maltodextrin and whey protein mixtures. *Powder Technology*, *363*, 519–524. https://doi.org/10.1016/j.powtec.2020.01.001

Cano-Chauca, M., Stringheta, P. C., Ramos, A. M., & Cal-Vidal, J. (2005). Effect of the carriers on the microstructure of mango powder obtained by spray drying and its functional characterization. *Innovative Food Science and Emerging Technologies*, *6*(4), 420–428. https://doi.org/10.1016/j.ifset.2005.05.003

Carneiro, H. C. F., Tonon, R. V., Grosso, C. R. F., & Hubinger, M. D. (2013). Encapsulation efficiency and oxidative stability of flaxseed oil microencapsulated by spray drying using different combinations of wall materials. *Journal of Food Engineering*, *115*(4), 443–451. https://doi.org/10.1016/j.jfoodeng.2012.03.033

Chen, H. W., Chen, S. Der, Wu, H. T., Cheng, C. H., Chiou, C. S., & Chen, W. T. (2024). Improvement in Curcumin's Stability and Release by Formulation in Flexible Nano-Liposomes. *Nanomaterials*, *14*(22). https://doi.org/10.3390/nano14221836

Cho, M. Y., Lee, E. S., Jung, H. I., & Kim, B. Il. (2023). Anti-biofilm activity of a novel nanoemulsion containing Curcuma xanthorrhiza oil. *Journal of Dentistry*, *137*. https://doi.org/10.1016/j.jdent.2023.104647

Chotiko, A., Phakawan, J., Changpasert, W., Chokumnoyporn, N., & Wannasawad, K. (2024). Optimization of fermented kombucha from black-aged garlic using response surface design and aroma-active compounds identification. *Applied Food Research*, *4*(2). https://doi.org/10.1016/j.afres.2024.100463

Chu, S. C., & Chen, C. (2006). Effects of origins and fermentation time on the antioxidant activities of kombucha. *Food Chemistry*, *98*(3), 502–507. https://doi.org/10.1016/j.foodchem.2005.05.080

Coelho, A. L. K., Muniz, V. R. G. F., Alberti, A., de Freitas, R. A., Kaspchak, E., Mafra, M. R., & Igarashi Mafra, L. (2024). Chemical stability of Curcuma longa extract stored in hydrophobic deep eutectic solvent and polymers

emulsion. *Food Hydrocolloids*, *146*. https://doi.org/10.1016/j.foodhyd.2023.109166

Dayma, V., Chopra, J., Sharma, P., Dwivedi, A., Tripathi, I. P., Bhargava, A., Murugesan, V., Goswami, A. K., & Baroliya, P. K. (2020). Synthesis, antidiabetic, antioxidant and anti-inflammatory activities of novel hydroxytriazenes based on sulpha drugs. *Heliyon*, *6*(8). https://doi.org/10.1016/j.heliyon.2020.e04787

de Almeida, K. V., Zanetti, V. C., Camelo-Silva, C., Alexandre, L. A., da Silva, A. C., Verruck, S., & Teixeira, L. J. Q. (2024). Powdered water kefir: Effect of spray drying and lyophilization on physical, physicochemical, and microbiological properties. *Food Chemistry Advances*, *5*. https://doi.org/10.1016/j.focha.2024.100759

de Oliveira Duarte, F. A., Ramos, K. K., Gini, C., Morasi, R. M., Silva, N. C. C., & Efraim, P. (2024). Microbiological characterization of kombucha and biocellulose film produced with black tea and cocoa bean shell infusion. *Food Research International*, *190*. https://doi.org/10.1016/j.foodres.2024.114568

Delaporte, A., Duchemin, B., Grisel, M., & Gore, E. (2024). Impact of Wall Material-to-Active Ratio in the Stability of Spray-Dried Ascorbic Acid Using Maltodextrin and Gum Arabic. *Molecules*, *29*(15). https://doi.org/10.3390/molecules29153587

Devaraj, S., Ismail, S., Ramanathan, S., Marimuthu, S., & Fei, Y. M. (2010). Evaluation of the hepatoprotective activity of standardized ethanolic extract of Curcuma xanthorrhiza Roxb. *Journal of Medicinal Plants Research*, *4*(23), 2512–2517. https://doi.org/10.5897/jmpr10.453

Di Mattia, C., Paradiso, V. M., Andrich, L., Giarnetti, M., Caponio, F., & Pittia, P. (2014). Effect of Olive Oil Phenolic Compounds and Maltodextrins on the Physical Properties and Oxidative Stability of Olive Oil O/W Emulsions. *Food Biophysics*, *9*(4), 396–405. https://doi.org/10.1007/s11483-014-9373-0

Diastuti, H., Asnani, A., & Chasani, M. (2019). Antifungal activity of curcuma xanthorrhiza and curcuma soloensis extracts and fractions. *IOP Conference Series: Materials Science and Engineering*, *509*(1). https://doi.org/10.1088/1757-899X/509/1/012047

Ding, H., Yu, W., Boiarkina, I., Depree, N., & Young, B. R. (2020). Effects of morphology on the dispersibility of instant whole milk powder. *Journal of Food Engineering*, *276*. https://doi.org/10.1016/j.jfoodeng.2019.109841

Do, H. T. T., & Nguyen, H. V. H. (2018). Effects of spray-drying temperatures and ratios of gum arabic to microcrystalline cellulose on antioxidant and physical

properties of mulberry juice powder. *Beverages*, *4*(4). https://doi.org/10.3390/beverages4040101

Donoso-Bustamante, V., Osorio, E., Arias-Santé, M. F., De Camargo, A. C., Rincón-Cervera, M. Á., Amalraj, J., Carrasco, B., Palomo, I., & Araya-Maturana, R. (2025). Antioxidant activity of sinapic acid anilides: DPPH, ABTS, FRAP, electrochemical and theoretical analysis. *LWT*, *222*. https://doi.org/10.1016/j.lwt.2025.117656

Erna, K. H., Felicia, W. X. L., Rovina, K., Vonnie, J. M., & Huda, N. (2022). Development of curcumin/rice starch films for sensitive detection of hypoxanthine in chicken and fish meat. *Carbohydrate Polymer Technologies and Applications*, *3*. https://doi.org/10.1016/j.carpta.2022.100189

Erpina, E., Rafi, M., Darusman, L. K., Vitasari, A., Putra, B. R., & Rohaeti, E. (2017). Simultaneous quantification of curcuminoids and xanthorrhizol in Curcuma xanthorrhiza by high-performance liquid chromatography. *Journal of Liquid Chromatography and Related Technologies*, *40*(12), 635–639. https://doi.org/10.1080/10826076.2017.1343729

Essiedu, J. A., Areerate, P., & Withayagiat, U. (2024). Evaluation of physiochemical composition, phenolic compounds, and antioxidant activity of Kombucha produced from Thunbergia laurifolia as a potential functional food. *International Journal of Food Science and Technology*, *59*(10), 6999–7010. https://doi.org/10.1111/ijfs.17408

Fazaeli, M., Emam-Djomeh, Z., Kalbasi Ashtari, A., & Omid, M. (2012). Effect of spray drying conditions and feed composition on the physical properties of black mulberry juice powder. *Food and Bioproducts Processing*, *90*(4), 667–675. https://doi.org/10.1016/j.fbp.2012.04.006

Fernandez-Rosillo, F., Cabrejos-Barrios, E. M., Chávez-Quintana, S. G., & Quiñones-Huatangari, L. (2025). Polyphenol Degradation Kinetics of Specialty Coffee in Different Presentations. *Foods*, *14*(21). https://doi.org/10.3390/foods14213600

Flores-Mancha, M. A., Ruíz-Gutiérrez, M. G., Sánchez-Vega, R., Santellano-Estrada, E., & Chávez-Martínez, A. (2020). Characterization of betabel extract (Beta vulgaris) encapsulated with maltodextrin and inulin. *Molecules*, *25*(23). https://doi.org/10.3390/molecules25235498

Grgić, J., Šelo, G., Planinić, M., Tišma, M., & Bucić-Kojić, A. (2020). Role of the encapsulation in bioavailability of phenolic compounds. In *Antioxidants* (Vol. 9, Number 10, pp. 1–36). MDPI. https://doi.org/10.3390/antiox9100923

Grondalska, J., & Kolniak-Ostek, J. (2025). Evaluation of Anti-Inflammatory, Antidiabetic, Antioxidant, and Anticholinergic Activities, as Well as Chemical

Composition and Polyphenolic Compounds in Novel SCOBY-Fermented Juices. *Molecules*, *30*(9). https://doi.org/10.3390/molecules30091940

Gültekin Subaşı, B., Vahapoglu, B., & Capanoglu, E. (2021). *Microencapsulation Methods for Food Antioxidants* (pp. 1–37). https://doi.org/10.1007/978-3-030-45299-5_25-1

Gunny, A. A. N., Qing, L. Z., & Mat, M. H. C. (2021). In-vitro antioxidant and antidiabetic activity of curcuma xanthorrhiza. *AIP Conference Proceedings*, *2339*. https://doi.org/10.1063/5.0044369

Guo, J., Li, P., Kong, L., & Xu, B. (2020). Microencapsulation of curcumin by spray drying and freeze drying. *LWT*, *132*. https://doi.org/10.1016/j.lwt.2020.109892

Handayani, T., Sakinah, S., Nallappan, M., & Pihie, A. H. L. (2007). Regulation of p53-, Bcl-2- and Caspase-dependent Signaling Pathway in Xanthorrhizol-induced Apoptosis of HepG2 Hepatoma Cells. *Anticancer Research*, *27*, 965–972.

Hasna, T., Anandito, B. K., Khasanah, L. U., Utami, R., & Manuhara, G. J. (2019). Kombinasi Maltodekstrin dan Whey sebagai Bahan Penyalut padaKarakteristik MikroenkapsulOleoresinKayu Manis (Cinnamomum burmanii). *AgriTECH*, *38*(3), 259. https://doi.org/10.22146/agritech.12725

Hassaninasab, A., Hashimoto, Y., Tomita-Yokotani, K., & Kobayashi, M. (2011). Discovery of the curcumin metabolic pathway involving a unique enzyme in an intestinal microorganism. *Proceedings of the National Academy of Sciences of the United States of America*, *108*(16), 6615–6620. https://doi.org/10.1073/pnas.1016217108

Hu, S., Ma, W. J., Fu, L. J., He, X. Y., Wang, G. H., Fu, J. W., & Yang, M. H. (2025). Biochemical component changes of Curcuma longa - Black tea triggered by kombucha fermentation using metabolomics analysis. *LWT*, *219*. https://doi.org/10.1016/j.lwt.2025.117553

Huang, Y. Bin, Zou, C., Gao, Y., Yin, J. F., Contursi, P., Zhang, S., Gong, Y. S., Liu, J. J., & Xu, Y. Q. (2024). Kombucha beverages made from Camellia nitidissima Chi and Camellia sinensis flowers—physicochemical properties, sensory properties and bioactivity. *International Journal of Gastronomy and Food Science*, *37*. https://doi.org/10.1016/j.ijgfs.2024.100964

Ipar, V. S., Singhal, R. S., & Devarajan, P. V. (2022). An innovative approach using microencapsulated turmeric oleoresin to develop ready-to-use turmeric milk powder with enhanced oral bioavailability. *Food Chemistry*, *373*(1). https://doi.org/10.1016/j.foodchem.2021.131400

Jamdar, F., Mortazavi, S. A., Asl, M. R. S., & Sharifi, A. (2020). Physicochemical properties and enzymatic activity of wheat germ extract microencapsulated with spray and freeze drying. *Food Science & Nutrition*, *9*(2), 1192–1201. https://doi.org/10.1002/fsn3.2104

Janiszewska-Turak, E., Bąk, P., Krzykowski, A., & Witrowa-Rajchert, D. (2021). The influence of the carrier addition and spray drying temperatures on physicochemical properties of microencapsulated carrot juice powder. *International Journal of Food Science and Technology*, *56*(6), 2768–2779. https://doi.org/10.1111/ijfs.14908

Jayabalan, R., Malbaša, R. V., Lončar, E. S., Vitas, J. S., & Sathishkumar, M. (2014). A review on kombucha tea-microbiology, composition, fermentation, beneficial effects, toxicity, and tea fungus. *Comprehensive Reviews in Food Science and Food Safety*, *13*(4), 538–550. https://doi.org/10.1111/1541-4337.12073

Jayabalan, R., Marimuthu, S., Thangaraj, P., Sathishkumar, M., Binupriya, A. R., Swaminathan, K., & Sei, E. Y. (2008). Preservation of kombucha tea - Effect of temperature on tea components and free radical scavenging properties. *Journal of Agricultural and Food Chemistry*, *56*(19), 9064–9071. https://doi.org/10.1021/jf8020893

Juarez-Enriquez, E., Olivas, G. I., Zamudio-Flores, P. B., Ortega-Rivas, E., Perez-Vega, S., & Sepulveda, D. R. (2017). Effect of water content on the flowability of hygroscopic powders. *Journal of Food Engineering*, *205*, 12–17. https://doi.org/10.1016/j.jfoodeng.2017.02.024

Kalajahi, S. E. M., Mohammadi, M., Soofi, M., Ghandiha, S., Sabzichi, M., & Hamishehkar, H. (2025). Application of encapsulated phenolic compounds from Hibiscus sabdariffa L. extract using maltodextrin, inulin, and quince seed mucilage to enhance stability and bioavailability in sponge cake. *Carbohydrate Polymer Technologies and Applications*, *11*. https://doi.org/10.1016/j.carpta.2025.100897

Kania, W., Andriani, MA. M., & Siswanti. (2015). Pengaruh variasi rasio bahan pengikat terhadap karakteristik fisik dan kimia granul minuman fungsional instan kecambah kacang komak (Lablab purpureus (L.) sweet). *Jurnal Teknosains Pangan*, *4*(3), 16–29.

Kanyuck, K. M., Mills, T. B., Norton, I. T., & Norton-Welch, A. B. (2019). Temperature influences on network formation of low DE maltodextrin gels. *Carbohydrate Polymers*, *218*, 170–178. https://doi.org/10.1016/j.carbpol.2019.04.039

Kilmanoglu, H., Akbas, M., Yigit Cinar, A., & Durak, M. Z. (2024). Kombucha as alternative microbial consortium for sourdough fermentation: Bread characterization and investigation of shelf life. *International Journal of Gastronomy and Food Science*, *35*(10). https://doi.org/10.1016/j.ijgfs.2024.100903

Kim, D. H., Kim, Y. W., Tin, Y. Y., Soe, M. T. P., Ko, B. H., Park, S. J., & Lee, J. W. (2021). Recent technologies for amorphization of poorly water-soluble drugs. *Pharmaceutics*, *13*(8). https://doi.org/10.3390/pharmaceutics13081318

Kim, M. B., Kim, C., Song, Y., & Hwang, J. K. (2014). Antihyperglycemic and anti-inflammatory effects of standardized Curcuma xanthorrhiza Roxb. Extract and its active compound xanthorrhizol in high-fat diet-induced obese mice. *Evidence-Based Complementary and Alternative Medicine*, *2014*. https://doi.org/10.1155/2014/205915

Kushargina, R., Rimbawan, R., Dewi, M., & Damayanthi, E. (2024). Metagenomic analysis, safety aspects, and antioxidant potential of kombucha beverage produced from telang flower (Clitoria ternatea L.) tea. *Food Bioscience*, *59*. https://doi.org/10.1016/j.fbio.2024.104013

Laavanya, D., Shirkole, S., & Balasubramanian, P. (2021). Current challenges, applications and future perspectives of SCOBY cellulose of Kombucha fermentation. In *Journal of Cleaner Production* (Vol. 295). Elsevier Ltd. https://doi.org/10.1016/j.jclepro.2021.126454

Labuza, T. P., & Altunakar, B. (2007). *Water Activity Prediction and Moisture Sorption Isotherms*. https://doi.org/https://doi.org/10.1002/9780470376454.CH5

Laureanti, E. J. G., Paiva, T. S., de Matos Jorge, L. M., & Jorge, R. M. M. (2023). Microencapsulation of bioactive compound extracts using maltodextrin and gum arabic by spray and freeze-drying techniques. *International Journal of Biological Macromolecules*, *253*. https://doi.org/10.1016/j.ijbiomac.2023.126969

Lee, C., & Yu, D. (2024). Impact of Prebiotic on Viability of Lactiplantibacillus plantarum D-2 by Encapsulation through Spray Drying and Its Commercialization Potential. *Journal of Microbiology and Biotechnology*, *34*(5), 1051–1058. https://doi.org/10.4014/jmb.2401.01019

Lee, L. Y., Shim, J.-S., Rukayadi, Y., & Hwang, J.-K. (2008). Antibacterial Activity of Xanthorrhizol Isolated from Curcuma xanthorrhiza Roxb. against Foodborne Pathogens. In *Journal of Food Protection* (Vol. 71, Number 9).

Leonarski, E., Guimarães, A. C., Cesca, K., & Poletto, P. (2022). Production process and characteristics of kombucha fermented from alternative raw materials. In

Food Bioscience (Vol. 49). Elsevier Ltd. https://doi.org/10.1016/j.fbio.2022.101841

Lew, K. F., & Rukayadi, Y. (2015). Antibacterial activity of java turmeric (Curcuma xanthorrhiza Roxb.) extract against Klebsiella pneumoniae isolated from several vegetables. In *Article in International Food Research Journal*. https://www.researchgate.net/publication/282754361

Li, S., Wang, R., Liu, R., Wang, L., Wang, X., Wei, J., Yuan, Y., Yue, T., Cai, R., & Wang, Z. (2024). Exploring the dynamic characteristic of typical kombucha induced by symbiotic microbiota succession from four Chinese regions: A comprehensive analytical framework. *Food Research International*, *198*. https://doi.org/10.1016/j.foodres.2024.115335

Lin, Y. S., Huang, W. Y., Ho, P. Y., Hu, S. Y., Lin, Y. Y., Chen, C. Y., Chang, M. Y., & Huang, S. L. (2020). Effects of storage time and temperature on antioxidants in juice from Momordica charantia L. And Momordica charantia L. var. abbreviata ser. *Molecules*, *25*(16). https://doi.org/10.3390/molecules25163614

Lonăr, E., Djurić, M., Malbaša, R., Kolarov, L. J., & Klašnja, M. (2006). Influence of working conditions upon Kombucha conducted fermentation of black tea. *Food and Bioproducts Processing*, *84*(3 C), 186–192. https://doi.org/10.1205/fbp.04306

Magwaza, L. S., & Opara, U. L. (2015). Analytical methods for determination of sugars and sweetness of horticultural products-A review. *Scientia Horticulturae*, *184*, 179–192. https://doi.org/10.1016/j.scienta.2015.01.001

Mahdavi, S. A., Jafari, S. M., Assadpoor, E., & Dehnad, D. (2016). Microencapsulation optimization of natural anthocyanins with maltodextrin, gum Arabic and gelatin. *International Journal of Biological Macromolecules*, *85*, 379–385. https://doi.org/10.1016/j.ijbiomac.2016.01.011

Mangope, K., Kaseke, T., & Fawole, O. A. (2024). Microencapsulation and characterization of pomegranate seed oil using gum Arabic and maltodextrin blends for functional food applications. *Food Science and Nutrition*, *12*(11), 9252–9267. https://doi.org/10.1002/fsn3.4493

Marković, J., Salević-Jelić, A., Milinčić, D., Gašić, U., Pavlović, V., Rabrenović, B., Pešić, M., Lević, S., Mihajlović, D., & Nedović, V. (2025). Horseradish (Armoracia rusticana L.) leaf juice encapsulated within polysaccharides-blend-based carriers: Characterization and application as potential antioxidants in mayonnaise production. *Food Chemistry*, *464*. https://doi.org/10.1016/j.foodchem.2024.141777

Martínez, B., Mendizabal, V., Roncero, M. B., Bernat-Maso, E., & Gil, L. (2024). Towards sustainable building solutions: Development of hemp shiv-based

green insulation material. *Construction and Building Materials*, *414*. https://doi.org/10.1016/j.conbuildmat.2024.134987

Mehrali, P., Peighambardoust, S. H., Akbarmehr, A., & Sarabandi, K. (2025). Insights into selection and application of carbohydrate-based carriers for microencapsulation: Stability and functional properties of maltodextrin, gum Arabic, and β-cyclodextrin in encapsulating tea flower pollen peptides. *Carbohydrate Polymer Technologies and Applications*, *9*. https://doi.org/10.1016/j.carpta.2025.100700

Mendoza, J., Peñuñuri-Miranda, O., Valdez-Cárdenas, M. d. C., Melendez-Pizarro, C. O., Lardizabal-Gutiérrez, D., Paraguay-Delgado, F., & Quintero-Ramos, A. (2025). Encapsulation of anthocyanins from purple corn cob via antisolvent precipitation: Effect of pH and zein/gum arabic ratio on the antioxidant activity, particle size and thermal stability. *Food Hydrocolloids for Health*, *7*. https://doi.org/10.1016/j.fhfh.2025.100197

Millinia, B. L., Mashithah, D., Nawatila, R., & Kartini, K. (2024). Microencapsulation of roselle (Hibiscus sabdariffa L.) anthocyanins: Effects of maltodextrin and trehalose matrix on selected physicochemical properties and antioxidant activities of spray-dried powder. *Future Foods*, *9*. https://doi.org/10.1016/j.fufo.2024.100300

Moghaddam, A. D., Pero, M., & Askari, G. R. (2017). Optimizing spray drying conditions of sour cherry juice based on physicochemical properties, using response surface methodology (RSM). *Journal of Food Science and Technology*, *54*(1), 174–184. https://doi.org/10.1007/s13197-016-2449-8

Mohammed, N. K., Tan, C. P., Manap, Y. A., Muhialdin, B. J., & Hussin, A. S. M. (2020). Spray Drying for the Encapsulation of Oils—A Review. *Molecules*, *25*(17). https://doi.org/10.3390/molecules25173873

Mohsin, A. Z., Mat Nor, N. A., Muhialdin, B. J., Mohd Roby, B. H., Abadl, M. M., Marzlan, A. A., Hussain, N., & Meor Hussin, A. S. (2022). The effects of encapsulation process involving arabic gum on the metabolites, antioxidant and antibacterial activity of kombucha (fermented sugared tea). *Food Hydrocolloids for Health*, *2*(1). https://doi.org/10.1016/j.fhfh.2022.100072

Mokale, M. J., Kesavan Pillai, S., & Sivakumar, D. (2025). Effects of Encapsulation and In Vitro Digestion on Anthocyanin Composition and Antioxidant Activity of Raspberry Juice Powder. *Foods*, *14*(14). https://doi.org/10.3390/foods14142492

Moshfegh, N., Niakousary, M., Hosseini, S. M. H., Mazloomi, S. M., & Abbasi, A. (2025). Effect of maltodextrin and Persian gum as wall materials and tannic acid as copigment on some properties of encapsulated sour cherry anthocyanin

microcapsules. *Food Chemistry*, *463*. https://doi.org/10.1016/j.foodchem.2024.141165

Nadali, N., Pahlevanlo, A., Sarabi-Jamab, M., & Balandari, A. (2022). Effect of maltodextrin with different dextrose equivalents on the physicochemical properties of spray-dried barberry juice (Berberis vulgaris L.). *Journal of Food Science and Technology*, *59*(7), 2855–2866. https://doi.org/10.1007/s13197-021-05308-w

Nascimento, A. P. S., Carvalho, A. J. de B. A., Lima, M. dos S., Barros, S. L., Ribeiro, S., Pasqualli, M., Lisboa, H. M., & Barros, A. N. (2023). Enhancing Antioxidant Retention through Varied Wall Material Combinations in Grape Spray Drying and Storage. *Antioxidants*, *12*(9). https://doi.org/10.3390/antiox12091745

Nascimento Filho, E. do, Barroca Silva, N. N., Converti, A., Ferreira Grosso, C. R., Pinheiro Santos, A. M., Silva Ribeiro, D., & Maciel, M. I. S. (2022). Microencapsulation of acerola (Malpighia emarginata DC) AND ciriguela (Spondias purpurea L) mixed juice with different wall materials. *Food Chemistry Advances*, *1*. https://doi.org/10.1016/j.focha.2022.100046

Naufal, A., Harini, N., & Putri, D. N. (2023). Karakteristik Kimia dan Sensori Minuman Instan Kombucha dari Kulit Buah Naga Merah (Hylocereus polyrhizus) Berdasarkan Konsentrasi Gula dan Lama Fermentasi. *Food Technology and Halal Science Journal*, *5*(2), 137–153. https://doi.org/10.22219/fths.v5i2.21556

Nguyen, C. T., Nguyen Di, K., Phan, H. C., Kha, T. C., & Nguyen, H. C. (2024). Microencapsulation of noni fruit extract using gum arabic and maltodextrin – Optimization, stability and efficiency. *International Journal of Biological Macromolecules*, *269*(2). https://doi.org/10.1016/j.ijbiomac.2024.132217

Nilakrisna, N., Patang, & Fadilah, R. (2024). Pengaruh Jenis Kemasan Dan Lama Penyimpanan Terhadap Kualitas Minuman Pangan Fungsional Berbahan Dasar Jahe (Zingiber officinale). *Jurnal Review Pendidikan Dan Pengajaran*, *7*(3).

Nurcholis, W., Munshif, A. A., & Ambarsari, L. (2018). Xanthorrhizol contents, α-glucosidase inhibition, and cytotoxic activities in ethyl acetate fraction of Curcuma zanthorrhiza accessions from indonesia. *Revista Brasileira de Farmacognosia*, *28*(1), 44–49. https://doi.org/10.1016/j.bjp.2017.11.001

Oliveira, D. M., Clemente, E., & da Costa, J. M. C. (2014). Hygroscopic behavior and degree of caking of grugru palm (Acrocomia aculeata) powder. *Journal of Food Science and Technology*, *51*(10), 2783–2789. https://doi.org/10.1007/s13197-012-0814-9

Ortiz-Basurto, R. I., Rubio-Ibarra, M. E., Ragazzo-Sanchez, J. A., Beristain, C. I., & Jiménez-Fernández, M. (2017). Microencapsulation of Eugenia uniflora L. juice by spray drying using fructans with different degrees of polymerisation. *Carbohydrate Polymers*, *175*, 603–609. https://doi.org/10.1016/j.carbpol.2017.08.030

Pant, K., Thakur, M., Chopra, H. K., & Nanda, V. (2022). Encapsulated bee propolis powder: Drying process optimization and physicochemical characterization. *LWT*, *155*. https://doi.org/10.1016/j.lwt.2021.112956

Park, J. H., Park, K. K., Kim, M. J., Hwang, J. K., Park, S. K., Chung, W. Y., & Chung, Y. (2008). CANCER CHEMOPROTECTIVE EFFECTS OF CURCUMA XANTHORRHIZA 695 Cancer Chemoprotective Effects of Curcuma xanthorrhiza. *Phytother. Res*, *22*, 695–698. https://doi.org/10.1002/ptr

Patel, S. S., Pushpadass, H. A., Franklin, M. E. E., Battula, S. N., & Vellingiri, P. (2022). Microencapsulation of curcumin by spray drying: Characterization and fortification of milk. *Journal of Food Science and Technology*, *59*(4), 1326–1340. https://doi.org/10.1007/s13197

Pilatti-Riccio, D., dos Santos, D. F., Meinhart, A. D., Knapp, M. A., Hackbart, H. C. dos S., & Pinto, V. Z. (2019). Impact of the use of saccharides in the encapsulation of Ilex paraguariensis extract. *Food Research International*, *125*. https://doi.org/10.1016/j.foodres.2019.108600

Premi, M., & Sharma, H. K. (2017). Effect of different combinations of maltodextrin, gum arabic and whey protein concentrate on the encapsulation behavior and oxidative stability of spray dried drumstick (Moringa oleifera) oil. *International Journal of Biological Macromolecules*, *105*, 1232–1240. https://doi.org/10.1016/j.ijbiomac.2017.07.160

Priyadarsini, K. I. (2009). Photophysics, photochemistry and photobiology of curcumin: Studies from organic solutions, bio-mimetics and living cells. In *Journal of Photochemistry and Photobiology C: Photochemistry Reviews* (Vol. 10, Number 2, pp. 81–95). https://doi.org/10.1016/j.jphotochemrev.2009.05.001

Pudžiuvelytė, L., Petrauskaitė, E., Stabrauskienė, J., & Bernatonienė, J. (2025). Spray-Drying Microencapsulation of Natural Bioactives: Advances in Sustainable Wall Materials. *Pharmaceuticals*, *18*(7). https://doi.org/10.3390/ph18070963

Purwanti, Y., Dwiyanti, H., Septiana, A. T., & Purbowati, I. S. M. (2021). Pengaruh Rasio Bahan Penyalut Maltodekstrin dan Gum Arab Terhadap Mikrokapsul

Kelopak Bunga Rosela (Hibiscuss sabdariffa L). *J. Sains Dan Teknologi Pangan*, *6*(5), 4422–4435.

Puspitojati, E., & Santoso, H. (2012). Optimasi Fermentasi Pada Pembuatan Ekstrak Temulawak Sebagai Bahan Baku Es Krim. *Jurnal Ilmu-Ilmu Pertanian*, *16*(2), 91–99.

Qadri, T., Naik, H. R., Hussain, S. Z., Bhat, T. A., Naseer, B., Zargar, I., & Beigh, M. A. (2023). Impact of spray drying conditions on the reconstitution, efficiency and flow properties of spray dried apple powder-optimization, sensorial and rheological assessment. *Heliyon*, *9*(8). https://doi.org/10.1016/j.heliyon.2023.e18527

Qadri, T., Naik, H. R., Hussain, S. Z., Naseer, B., Bhat, T., Vijaykumar, & Wani, F. J. (2022). Spray dried apple powder: Qualitative, rheological, structural characterization and its sorption isotherm. *LWT*, *165*. https://doi.org/10.1016/j.lwt.2022.113694

Raharjo, D., Praseptiangga, D., Zaman, M. Z., & Yunus, A. (2025). Chitosan and gum arabic as wall materials to encapsulate Hopea beccariana Burck stem bark extract into powder form by spray drying. *Bioresource Technology Reports*, *30*. https://doi.org/10.1016/j.biteb.2025.102131

Rahman, R. F., Aminullah, & Hapsari, D. R. (2023). Karakteristik Sensori, Kimia, dan Aktivitas Antioksidan Kue Egg Roll dengan Penambahan Tepung Temulawak (Curcuma xanthorrhiza Roxb). *Jurnal Agroindustri Halal*, *9*, 320–331.

Rahmani, R., Beaufort, S., Villarreal-Soto, S. A., Taillandier, P., Bouajila, J., & Debouba, M. (2019). Kombucha fermentation of African mustard (Brassica tournefortii)leaves: Chemical composition and bioactivity. *Food Bioscience*, *30*. https://doi.org/10.1016/j.fbio.2019.100414

Réblová, Z. (2012). Effect of Temperature on the Antioxidant Activity of Phenolic Acids. In *Czech J. Food Sci* (Vol. 30, Number 2).

Ren, W., Tian, G., Zhao, S., Yang, Y., Gao, W., Zhao, C., Zhang, H., Lian, Y., Wang, F., Du, H., Xiao, H., & Zheng, J. (2020). Effects of spray-drying temperature on the physicochemical properties and polymethoxyflavone loading efficiency of citrus oil microcapsules. *LWT*, *133*. https://doi.org/10.1016/j.lwt.2020.109954

Rosidi, A., Khomsan, A., Setiawan, B., Riyadi, H., & Briawan, D. (2016). Antioxidant Potential of Temulawak (Curcuma xanthorrhiza roxb). *Pakistan Journal of Nutrition*, *15*(6), 556–560. https://doi.org/10.3923/pjn.2016.556.560

Rumpf, J., Burger, R., & Schulze, M. (2023). Statistical evaluation of DPPH, ABTS, FRAP, and Folin-Ciocalteu assays to assess the antioxidant capacity of lignins. *International Journal of Biological Macromolecules*, *233*. https://doi.org/10.1016/j.ijbiomac.2023.123470

Saavedra-Leos, Z., Leyva-Porras, C., Araujo-Díaz, S. B., Toxqui-Terán, A., & Borrás-Enríquez, A. J. (2015). Technological application of maltodextrins according to the degree of polymerization. *Molecules*, *20*(12), 21067–21081. https://doi.org/10.3390/molecules201219746

Sadiq, U., Gill, H., Chandrapala, J., & Shahid, F. (2022). Influence of Spray Drying on Encapsulation Efficiencies and Structure of Casein Micelles Loaded with Anthraquinones Extracted from Aloe vera Plant. *Applied Sciences*, *13*(110). https://doi.org/10.3390/app13010110

Sangande, F., Agustini, K., & Budipramana, K. (2023). Antihyperlipidemic mechanisms of a formula containing Curcuma xanthorrhiza, Sechium edule, and Syzigium polyanthum: In silico and in vitro studies. *Computational Biology and Chemistry*, *105*. https://doi.org/10.1016/j.compbiolchem.2023.107907

Santana, D. C., Danieleto, F. B., Valdo, K. O., Arpini-Costa, C. M., Kalil, I. C., Andrade, T. U., Azevedo Bertolazi, A., Passos, H. G. S., & Vasconcelos, C. M. (2024). Kombucha and its dehydrated and freeze-dried derivatives: physicochemical and microbiological characterization and in vivo toxicity evaluation Kombucha y sus derivados deshidratados y liofilizados: caracterización fisicoquímica, microbiológica y evaluación de toxicidad in vivo. *Revista de Ciencia y Tecnología*, 54–63. https://doi.org/10.36995/j.recyt.2024.41.007

Saputri, F. A., Mun'im, A., Putri, C. R., & Aryani, D. (2022). Validasi Metode Analisis Kurkuminoid dan Xantorizol pada Rimpang Temulawak (Curcuma xanthorrhiza) dengan KLT-Densitometri. *MPI (Media Pharmaceutica Indonesiana)*, *4*(2). https://doi.org/10.24123/mpi.v4i2.5297

Sarıtaş, S., Portocarrero, A. C. M., Miranda López, J. M., Lombardo, M., Koch, W., Raposo, A., El-Seedi, H. R., de Brito Alves, J. L., Esatbeyoglu, T., Karav, S., & Witkowska, A. M. (2024). The Impact of Fermentation on the Antioxidant Activity of Food Products. In *Molecules* (Vol. 29, Number 16). Multidisciplinary Digital Publishing Institute (MDPI). https://doi.org/10.3390/molecules29163941

Sarungallo, Z. L., Santoso, B., Murtiningrum, M., K. Roreng, M., & Murni, V. (2019). KARAKTERISTIK MUTU MIKROENKAPSULAT MINYAK BUAH MERAH (Pandanus conoideus) DENGAN PERBANDINGAN

KONSENTRAS. *Pro Food*, *5*(2), 528–540. https://doi.org/10.29303/profood.v5i2.119

Sharma, K., Ko, E. Y., Assefa, A. D., Ha, S., Nile, S. H., Lee, E. T., & Park, S. W. (2015). Temperature-dependent studies on the total phenolics, flavonoids, antioxidant activities, and sugar content in six onion varieties. *Journal of Food and Drug Analysis*, *23*(2), 243–252. https://doi.org/10.1016/j.jfda.2014.10.005

Sholikhah, N. I., Alfian, M., & Fatimah, F. A. (2023). Uji aktivitas antioksidan minuman serbuk instan temulawak (Curcuma xanthorriza Roxb) produksi mitra sehat kiringan bantul. *Akfarindo*, *8*(1), 50–55.

Simamora, A., Timotius, K. H., Setiawan, H., Saputri, F. A., Putri, C. R., Aryani, D., Ningrum, R. A., & Mun'im, A. (2024). Ultrasonic-Assisted Extraction of Xanthorrhizol from Curcuma xanthorrhiza Roxb. Rhizomes by Natural Deep Eutectic Solvents: Optimization, Antioxidant Activity, and Toxicity Profiles. *Molecules (Basel, Switzerland)*, *29*(9). https://doi.org/10.3390/molecules29092093

Simamora, A., Timotius, K. H., Yerer, M. B., Setiawan, H., & Mun'im, A. (2022). Xanthorrhizol, a potential anticancer agent, from Curcuma xanthorrhiza Roxb. In *Phytomedicine* (Vol. 105). Elsevier GmbH. https://doi.org/10.1016/j.phymed.2022.154359

Sinamo, K. N., Ginting, S., & Pratama, S. (2022). Effect of sugar concentration and fermentation time on secang kombucha drink. *IOP Conference Series: Earth and Environmental Science*, *977*(1). https://doi.org/10.1088/1755-1315/977/1/012080

Stoll, L., Costa, T. M. H., Jablonski, A., Flôres, S. H., & de Oliveira Rios, A. (2016). Microencapsulation of Anthocyanins with Different Wall Materials and Its Application in Active Biodegradable Films. *Food and Bioprocess Technology*, *9*(1), 172–181. https://doi.org/10.1007/s11947-015-1610-0

Šturm, L., Osojnik Črnivec, I. G., Istenič, K., Ota, A., Megušar, P., Slukan, A., Humar, M., Levic, S., Nedović, V., Kopinč, R., Deželak, M., Pereyra Gonzales, A., & Poklar Ulrih, N. (2019). Encapsulation of non-dewaxed propolis by freeze-drying and spray-drying using gum Arabic, maltodextrin and inulin as coating materials. *Food and Bioproducts Processing*, *116*, 196–211. https://doi.org/10.1016/j.fbp.2019.05.008

Suhag, Y., Nayik, G. A., & Nanda, V. (2016). Effect of gum arabic concentration and inlet temperature during spray drying on physical and antioxidant properties of honey powder. *Journal of Food Measurement and*

Characterization, *10*(2), 350–356. https://doi.org/10.1007/s11694-016-9313-4

Suprianto, T., Winarto, Wijayanti, W., & Wardana, I. N. G. (2021). Synergistic effect of curcumin and activated carbon catalyst enhancing hydrogen production from biomass pyrolysis. *International Journal of Hydrogen Energy*, *46*(10), 7147–7164. https://doi.org/10.1016/j.ijhydene.2020.11.211

Taheri, A., & Jafari, S. M. (2019). Gum-based nanocarriers for the protection and delivery of food bioactive compounds. In *Advances in Colloid and Interface Science* (Vol. 269, pp. 277–295). Elsevier B.V. https://doi.org/10.1016/j.cis.2019.04.009

Tao, Y., Tang, Z., Huang, Q., Xu, X., Cheng, X., Zhang, G., Jing, X., Li, X., Liang, J., Granato, D., & Sun, Y. (2024). Effects of spray drying temperature on physicochemical properties of grapeseed oil microcapsules and the encapsulation efficiency of pterostilbene. *LWT*, *193*. https://doi.org/10.1016/j.lwt.2024.115779

Taskin, O., Izli, G., & Izli, N. (2021). Physicochemical and Morphological Properties of European Cranberrybush Powder Manufactured by Freeze Drying. *International Journal of Fruit Science*, *21*(1), 1008–1017. https://doi.org/10.1080/15538362.2021.1971141

Taupiqurrohman, O., Hastuti, L. P., Oktavia, D., Al-Najjar, B. O., Yusuf, M., Suryani, Y., & Gaffar, S. (2024). From fermentation to cancer prevention: The anticancer potential of Kombucha. In *Phytomedicine Plus* (Vol. 4, Number 4). Elsevier B.V. https://doi.org/10.1016/j.phyplu.2024.100633

Teo, A., Lam, Y., Lee, S. J., & Goh, K. K. T. (2021). Spray drying of whey protein stabilized nanoemulsions containing different wall materials – maltodextrin or trehalose. *LWT*, *136*. https://doi.org/10.1016/j.lwt.2020.110344

Thibodeau, A., Reardon, P., Bartlett, B., & Curtin, C. (2025). Changes in microbial community structure during adaptation of kombucha symbiotic culture of bacteria and yeast to fermentation of sweet and acid whey. *Journal of Dairy Science*, *108*(5), 4761–4784. https://doi.org/10.3168/jds.2024-25859

Tolun, A., Altintas, Z., & Artik, N. (2016). Microencapsulation of grape polyphenols using maltodextrin and gum arabic as two alternative coating materials: Development and characterization. *Journal of Biotechnology*, *239*, 23–33. https://doi.org/10.1016/j.jbiotec.2016.10.001

Tonon, R. V., Brabet, C., & Hubinger, M. D. (2010). Anthocyanin stability and antioxidant activity of spray-dried açai (Euterpe oleracea Mart.) juice produced with different carrier agents. *Food Research International*, *43*(3), 907–914. https://doi.org/10.1016/j.foodres.2009.12.013

Tonon, R. V., Grosso, C. R. F., & Hubinger, M. D. (2011). Influence of emulsion composition and inlet air temperature on the microencapsulation of flaxseed oil by spray drying. *Food Research International*, *44*(1), 282–289. https://doi.org/10.1016/j.foodres.2010.10.018

Toprakçı, İ., Güngör, K. K., Torun, M., & Şahin, S. (2024). Spray-drying microencapsulation of plum peel bioactives using Arabic gum and maltodextrin as coating matrix. *Food Bioscience*, *61*. https://doi.org/10.1016/j.fbio.2024.104824

Tu, C., Yu, T., Feng, S., Xu, N., Massawe, A., Shui, S., & Zhang, B. (2024). Dynamics of microbial communities, flavor, and physicochemical properties of kombucha-fermented Sargassum fusiforme beverage during fermentation. *LWT*, *192*. https://doi.org/10.1016/j.lwt.2024.115729

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

Vargas, V., Saldarriaga, S., Sánchez, F. S., Cuellar, L. N., & Paladines, G. M. (2024). Effects of the spray-drying process using maltodextrin on bioactive compounds and antioxidant activity of the pulp of the tropical fruit açai (Euterpe oleracea Mart.). *Heliyon*, *10*(13). https://doi.org/10.1016/j.heliyon.2024.e33544

Villarreal-Soto, S. A., Beaufort, S., Bouajila, J., Souchard, J. P., & Taillandier, P. (2018). Understanding Kombucha Tea Fermentation: A Review. In *Journal of Food Science* (Vol. 83, Number 3, pp. 580–588). Blackwell Publishing Inc. https://doi.org/10.1111/1750-3841.14068

Wang, B., Rutherfurd-Markwick, K., Zhang, X. X., Xu, C., & Mutukumira, A. N. (2025). Effect of fermentation conditions on bioactive compounds, physicochemical properties, antimicrobial activities, and cellulosic pellicle formation in black tea Kombucha. *Biocatalysis and Agricultural Biotechnology*, *65*. https://doi.org/10.1016/j.bcab.2025.103547

Wang, L., Wu, P., Hu, Z., Chen, Y., Jin, X., Deng, R., Kirk, T. V., & Chen, X. D. (2024). Curcumin-loaded microcapsules with soy and whey protein as wall material: In vitro release, and ex vivo absorption based on the rat small intestine. *Journal of Food Engineering*, *383*. https://doi.org/10.1016/j.jfoodeng.2024.112254

Watawana, M. I., Jayawardena, N., & Waisundara, V. Y. (2015). Enhancement of the Functional Properties of Coffee Through Fermentation by “Tea Fungus” (Kombucha). *Journal of Food Processing and Preservation*, *39*(6), 2596–2603. https://doi.org/10.1111/jfpp.12509

Xiang, Z., & Runge, T. (2016). Emulsifying properties of succinylated arabinoxylan-protein gum produced from corn ethanol residuals. *Food Hydrocolloids*, *52*, 423–430. https://doi.org/10.1016/j.foodhyd.2015.07.018

Xiao, Z., Xia, J., Zhao, Q., Niu, Y., & Zhao, D. (2022). Maltodextrin as wall material for microcapsules: A review. In *Carbohydrate Polymers* (Vol. 298). Elsevier Ltd. https://doi.org/10.1016/j.carbpol.2022.120113

Xiong, R. G., Zhou, D. D., Cheng, J., Wu, S. X., Saimaiti, A., Huang, S. Y., Liu, Q., Shang, A., Li, H. Bin, & Li, S. (2024). Preparation and evaluation of liquorice (Glycyrrhiza uralensis) and ginger (Zingiber officinale) kombucha beverage based on antioxidant capacities, phenolic compounds and sensory qualities. *International Journal of Gastronomy and Food Science*, *35*. https://doi.org/10.1016/j.ijgfs.2024.100869

Xu, C., Yu, Z., Zhou, S., Feng, H., Du, Q., Yuan, X., Fan, R., Jiang, H., Yang, Y., Han, R., & Wang, X. (2025). Dynamic changes in physicochemical, bacterial, and volatile profiles during kombucha fermentation of mulberry fruits and leaves. *Food Research International*, *218*. https://doi.org/10.1016/j.foodres.2025.116813

Xu, Y., Yan, X., Zheng, H., Li, J., Wu, X., Xu, J., Zhen, Z., & Du, C. (2024). The application of encapsulation technology in the food Industry: Classifications, recent Advances, and perspectives. In *Food Chemistry: X* (Vol. 21). Elsevier Ltd. https://doi.org/10.1016/j.fochx.2024.101240

Yang, X., Du, Y., Feng, Z., Liu, Z., & Li, J. (2018). Establishment and molecular modeling study of maltodextrin-based synergistic enantioseparation systems with two new hydroxy acid chiral ionic liquids as additives in capillary electrophoresis. *Journal of Chromatography A*, *1559*, 170–177. https://doi.org/10.1016/j.chroma.2017.06.007

Young Cho, J., Yeon Kim, H., Me Kim, H., Na Song, H., Hong, E., Hwang, J. K., & Chun, H. S. (2017). Standardized ethanolic extract of the rhizome of Curcuma xanthorrhiza prevents murine ulcerative colitis by regulation of inflammation. *Journal of Functional Foods*, *30*, 282–289. https://doi.org/10.1016/j.jff.2017.01.020

Yousefi, S., Emam-Djomeh, Z., & Mousavi, S. M. (2011). Effect of carrier type and spray drying on the physicochemical properties of powdered and reconstituted pomegranate juice (Punica Granatum L.). *Journal of Food Science and Technology*, *48*(6), 677–684. https://doi.org/10.1007/s13197-010-0195-x

Yuliana, N., Nurainy, F., Sari, G. W., Sumardi, & Widiastuti, E. L. (2023). Total microbe, physicochemical property, and antioxidative activity during

fermentation of cocoa honey into kombucha functional drink. *Applied Food Research*, *3*(1). https://doi.org/10.1016/j.afres.2023.100297

Zhang, J., Ma, H., Wang, H., Sun, M., Yu, C., Liu, Q., He, Z., Song, S., Feng, T., & Yao, L. (2024). Flavor and sensory profile of kombucha fermented with raw Pu-erh tea and evaluation of the antioxidant properties. *LWT*, *200*. https://doi.org/10.1016/j.lwt.2024.116220

Zhang, L., Zeng, X., Fu, N., Tang, X., Sun, Y., & Lin, L. (2018). Maltodextrin: A consummate carrier for spray-drying of xylooligosaccharides. *Food Research International*, *106*, 383–393. https://doi.org/10.1016/j.foodres.2018.01.004

Zhang, W., Huang, J., Wo, X., & Wang, P. (2013). Microbial transformation of curcumin to its derivatives with a novel Pichia kudriavzevii ZJPH0802 strain. *Applied Biochemistry and Biotechnology*, *170*(5), 1026–1037. https://doi.org/10.1007/s12010-013-0256-5

Zhao, B., Yang, Z., Li, Z., & Niu, B. (2025). Encapsulation of curcumin in chitosan-phytic acid (CS-PA) capsule: bioavailability, simulated gastrointestinal digestion, and colonic fermentation in vitro. *Food Bioscience*, *68*. https://doi.org/10.1016/j.fbio.2025.106612

Zhao, Y. S., Eweys, A. S., Zhang, J. Y., Zhu, Y., Bai, J., Darwesh, O. M., Zhang, H. B., & Xiao, X. (2021). Fermentation affects the antioxidant activity of plant-based food material through the release and production of bioactive components. *Antioxidants*, *10*(12). https://doi.org/10.3390/antiox10122004

Zubaidah, E., Dea, E. C., & Sujuti, H. (2022). Physicochemical and microbiological characteristics of kombucha based on various concentration of Javanese turmeric (Curcuma xanthorrhiza). *Biocatalysis and Agricultural Biotechnology*, *44*. https://doi.org/10.1016/j.bcab.2022.102467

Zubaidah, E., Mahendra Putri, Z., Sujuti, H., Putri Rahayu, A., & Ardyati, T. (2024). Physicochemical characteristics of kombucha based on various concentration of white turmeric (Curcuma zedoaria (Berg.) Roscoe). *Biocatalysis and Agricultural Biotechnology*, *56*. https://doi.org/10.1016/j.bcab.2023.102998

Zubaidah, E., Susanti, I., Sujuti, H., Martati, E., Rahayu, A. P., Srianta, I., & Tewfik, I. (2023). The distinctive hepatoprotective activity of turmeric kombucha (Curcuma longa) induced by diethylnitrosamine in Balb/C mice. *Food Bioscience*, *55*. https://doi.org/10.1016/j.fbio.2023.103043