



## DAFTAR PUSTAKA

- Abdiwibowo, R., Bachruddin, Z., & Kurniawati, A. (2021). Lactic Acid Bacteria Fermentation of High Protein Feeds: Effect Storage Time Aerobically and Turmeric ( *Curcuma Longa* ) Addition on Quality of Fermented, Fortified and Protected Protein Feed . *Proceedings of the 10th International Seminar and 12th Congress of Indonesian Society for Microbiology (ISISM 2019)*, 15(Isism 2019), 175–180. <https://doi.org/10.2991/absr.k.210810.031>
- Açık, M., Çakiroğlu, F. P., Altan, M., & Baybo, T. (2020). Alternative source of probiotics for lactose intolerance and vegan individuals: Sugary kefir. *Food Science and Technology (Brazil)*, 40(3), 523–531. <https://doi.org/10.1590/fst.27919>
- Agirman, B., Yildiz, I., Polat, S., & Erten, H. (2024). The Evaluation of Black Carrot, Green Cabbage, Grape, and Apple Juices as Substrates for The Production of Functional Water Kefir-Like Beverages. *Food Science and Nutrition*, 12, 6595–6611. <https://doi.org/10.1002/fsn3.4293>
- Ak, T., & Gülçin, I. (2008). Antioxidant and Radical Scavenging Properties of Curcumin. *Chemico-Biological Interactions*, 174(1), 27–37. <https://doi.org/10.1016/j.cbi.2008.05.003>
- Akarchariya, N., Sirilun, S., Julsrigival, J., & Chansakaowa, S. (2017). Chemical Profiling and Antimicrobial Activity of Essential Oil from *Curcuma aeruginosa* Roxb., *Curcuma glans* K. Larsen & J. Mood and *Curcuma cf. xanthorrhiza* Roxb. Collected in Thailand. *Asian Pacific Journal of Tropical Biomedicine*, 7(10), 881–885. <https://doi.org/10.1016/j.apjtb.2017.09.009>
- Alvarado, H. L., Limón, D., Calpena-Campmany, A. C., Mallandrich, M., Rodríguez-Cid, L., Aliaga-Alcalde, N., González-Campo, A., & Pérez-García, L. (2023). Intrinsic Permeation and Anti-Inflammatory Evaluation of Curcumin, Bisdemethoxycurcumin and Bisdemethylcurcumin by a Validated HPLC-UV Method. *International Journal of Molecular Sciences*, 24(7). <https://doi.org/10.3390/ijms24076640>
- Amalraj, A., Pius, A., Gopi, S., & Gopi, S. (2017). Biological Activities of Curcuminoids, Other Biomolecules from Turmeric and Their Derivatives – A review. *Journal of Traditional and Complementary Medicine*, 7(2), 205–233. <https://doi.org/10.1016/j.jtcme.2016.05.005>
- Anggarani, M. A., Rusijono, R., & Maulana, D. A. (2018). Optimizing the Drying Temperature of Temulawak *Simplicia* (*Curcuma xanthorrhiza* Roxb.) Based on Water and Ash Content and Functional Compound. *Journal of Physics: Conference Series*, 1108(1). <https://doi.org/10.1088/1742-6596/1108/1/012099>



- Apak, R., Özyürek, M., Güçlü, K., & Çapanoğlu, E. (2016). Antioxidant activity/capacity measurement. 1. Classification, physicochemical principles, mechanisms, and electron transfer (ET)-based assays. *Journal of Agricultural and Food Chemistry*, *64*(5), 997–1027. <https://doi.org/10.1021/acs.jafc.5b04739>
- Arapović, M., Puljić, L., Kajić, N., Banožić, M., Kartalović, B., Habschied, K., & Mastanjević, K. (2024). The Impact of Production Techniques on the Physicochemical Properties, Microbiological, and Consumer's Acceptance of Milk and Water Kefir Grain-Based Beverages. *Fermentation*, *10*(1). <https://doi.org/10.3390/fermentation10010002>
- Arrieta-Echeverri, M. C., Fernandez, G. J., Duarte-Riveros, A., Correa-Álvarez, J., Bardales, J. A., Villanueva-Mejía, D. F., & Sierra-Zapata, L. (2023). Multi-omics characterization of the microbial populations and chemical space composition of a water kefir fermentation. *Frontiers in Molecular Biosciences*, *10*(October), 1–16. <https://doi.org/10.3389/fmolb.2023.1223863>
- Awin, T., Mediani, A., Maulidiani, Leong, S. W., Muhd Faudzi, S. M., Shaari, K., & Abas, F. (2019). Phytochemical and bioactivity alterations of *Curcuma* species harvested at different growth stages by NMR-based metabolomics. *Journal of Food Composition and Analysis*, *77*(October 2018), 66–76. <https://doi.org/10.1016/j.jfca.2019.01.004>
- Baniasadi, M., Azizkhani, M., Saris, P. E. J., & Tooryan, F. (2022). Comparative Antioxidant Potential of Kefir and Yogurt of Bovine and Non-Bovine Origins. *Journal of Food Science and Technology*, *59*(4), 1307–1316. <https://doi.org/10.1007/s13197-021-05139-9>
- Batubara, I., Julita, I., Darusman, L. K., Muddathir, A. M., & Mitsunaga, T. (2015). Flower Bracts of Temulawak (*Curcuma Xanthorrhiza*) for Skin Care: Anti-acne and Whitening Agents. *Procedia Chemistry*, *14*, 216–224. <https://doi.org/10.1016/j.proche.2015.03.031>
- Ben, N., Roblain, D., Chammen, N., Thonart, P., & Hamdi, M. (2009). Antioxidant Phenolic Compounds Loss during The Fermentation of Chétoui Olives. *Food Chemistry*, *116*(3), 662–669. <https://doi.org/10.1016/j.foodchem.2009.02.084>
- Boulebd, H. (2020). Comparative study of the radical scavenging behavior of ascorbic acid, BHT, BHA and Trolox: Experimental and theoretical study. *Journal of Molecular Structure*, *1201*, 127210. <https://doi.org/10.1016/j.molstruc.2019.127210>
- Buniowska-Olejnik, M., Urbański, J., Mykhalevych, A., Bieganowski, P., Znamirowska-Piotrowska, A., Kačániová, M., & Banach, M. (2023). The influence of curcumin additives on the viability of probiotic bacteria, antibacterial activity



- against pathogenic microorganisms, and quality indicators of low-fat yogurt. *Frontiers in Nutrition*, 10(April), 1–14. <https://doi.org/10.3389/fnut.2023.1118752>
- Chandrasekara, A., & Shahidi, F. (2018). Herbal beverages: Bioactive compounds and their role in disease risk reduction - A review. In *Journal of Traditional and Complementary Medicine* (Vol. 8, Issue 4, pp. 451–458). National Taiwan University. <https://doi.org/10.1016/j.jtcme.2017.08.006>
- Chang, K. M., & Kim, G. H. (2012). Volatiles of *Chrysanthemum zawadskii* var. *latilobum* K. *Preventive Nutrition and Food Science*, 17(3), 234–238. <https://doi.org/10.3746/pnf.2012.17.3.234>
- Constantin, E., Popa-tudor, I., Matei, F., Constantinescu-aruxandei, D., & Oancea, F. (2023). Evaluation of Polyphenol Content and Antioxidant Activity of Standard Water Kefir †. *Chemistry Proceeding*, 1–8.
- Corona, O., Randazzo, W., Miceli, A., Guarcello, R., Francesca, N., Erten, H., Moschetti, G., & Settanni, L. (2016). Characterization of kefir-like beverages produced from vegetable juices. *LWT*, 66, 572–581. <https://doi.org/10.1016/j.lwt.2015.11.014>
- Côté, G. L., Skory, C. D., Unser, S. M., & Rich, J. O. (2013). The production of glucans via glucansucrases from *Lactobacillus satsumensis* isolated from a fermented beverage starter culture. *Applied Microbiology and Biotechnology*, 97, 7265–7273. <https://doi.org/10.1007/s00253-012-4606-y>
- Cufaoglu, G., & Erdinc, A. N. (2023). An alternative source of probiotics: Water kefir. *Food Frontiers*, 4(1), 21–31. <https://doi.org/10.1002/fft2.200>
- Darvishzadeh, P., Orsat, V., & Martinez, J. L. (2021). Process Optimization for Development of a Novel Water Kefir Drink with High Antioxidant Activity and Potential Probiotic Properties from Russian Olive Fruit (*Elaeagnus angustifolia*). *Food and Bioprocess Technology*, 14(2), 248–260. <https://doi.org/10.1007/s11947-020-02563-1>
- Davidović, S. Z., Miljković, M. G., Antonović, D. G., Rajilić-Stojanović, M. D., & Dimitrijević-Branković, S. I. (2015). Water Kefir grain as a source of potent dextran producing lactic acid bacteria. *Hemijaska Industrija*, 69(6), 595–604. <https://doi.org/10.2298/HEMIND140925083D>
- de Almeida, K. V., Sant' Ana, C. T., Wichello, S. P., Louzada, G. E., Verruck, S., & Teixeira, L. J. Q. (2025). Water Kefir: Review of Microbial Diversity, Potential Health Benefits, and Fermentation Process. *Processes*, 13(3), 1–13. <https://doi.org/10.3390/pr13030885>
- Deeseenthum, S., Luang-In, V., & Chunchom, S. (2018). Characteristics of Thai pigmented rice milk kefir with potential as antioxidant and anti-inflammatory



- foods. *Pharmacognosy Journal*, 10(1), 154–161.  
<https://doi.org/10.5530/pj.2018.1.26>
- 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>
- Dileep, K. V, Tintu, I., & Sadasivan, C. (2011). Molecular docking studies of curcumin analogs with phospholipase A2. *Interdisciplinary Sciences: Computational Life Sciences*, 3(3), 189–197. <https://doi.org/10.1007/s12539-011-0090-9>
- Duraisankar, M., & Ravindran, A. D. (2014). Identification of *Curcuma longa* Rhizomes by Physicochemical and TLC Fingerprint Analysis. *International Journal of Pharmacognosy*, 7(2), 107–115. [https://doi.org/10.13040/IJPSR.0975-8232.IJP.2\(9\).459-65](https://doi.org/10.13040/IJPSR.0975-8232.IJP.2(9).459-65)
- Eckel, V. P. L., & Vogel, R. F. (2020). Genomic and physiological insights into the lifestyle of *Bifidobacterium* species from water kefir. *Archives of Microbiology*, 202(7), 1627–1637. <https://doi.org/10.1007/s00203-020-01870-7>
- Ellis, S. L. S., Nohara, L. L., Dada, S., Saranchova, I., Munro, L., Choi, K. B., Garrovillas, E., Pfeifer, C. G., Williams, D. E., Cheng, P., Andersen, R. J., & Jefferies, W. A. (2023). Curcuphenols facilitate the immune driven attenuation of metastatic tumour growth. *Frontiers in Natural Products*, 2(December), 1–16. <https://doi.org/10.3389/fntpr.2023.1281061>
- 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>
- Fels, L., Jakob, F., Vogel, R. F., & Wefers, D. (2018). Structural characterization of the exopolysaccharides from water kefir. *Carbohydrate Polymers*, 189(October 2017), 296–303. <https://doi.org/10.1016/j.carbpol.2018.02.037>
- Feng, J. Y., & Liu, Z. Q. (2009). Phenolic and Enolic Hydroxyl Groups in Curcumin: Which Plays The Major Role in Scavenging Radicals? *Journal of Agricultural and Food Chemistry*, 57(22), 11041–11046. <https://doi.org/10.1021/jf902244g>
- Fiorda, F. A., de Melo Pereira, G. V., Thomaz-Soccol, V., Rakshit, S. K., Pagnoncelli, M. G. B., Vandenberghe, L. P. de S., & Soccol, C. R. (2017). Microbiological, biochemical, and functional aspects of sugary kefir fermentation - A review. In *Food Microbiology* (Vol. 66, pp. 86–95). Academic Press. <https://doi.org/10.1016/j.fm.2017.04.004>



- Fitria, R., Seno, D. S. H., Priosoeryanto, B. P., Hartanti, & Nurcholis, W. (2019). Volatile compound profiles and cytotoxicity in essential oils from rhizome of *Curcuma aeruginosa* and *Curcuma zanthorrhiza*. *Biodiversitas*, 20(10), 2943–2948. <https://doi.org/10.13057/biodiv/d201024>
- Gamba, R. R., Yamamoto, S., Abdel-Hamid, M., Sasaki, T., Michihata, T., Koyanagi, T., & Enomoto, T. (2020). Chemical, Microbiological, and Functional Characterization of Kefir Produced from Cow's Milk and Soy Milk. *International Journal of Microbiology*, 2020. <https://doi.org/10.1155/2020/7019286>
- Ganatsios, V., Nigam, P., Plessas, S., & Terpou, A. (2021a). Kefir as a functional beverage gaining momentum towards its health promoting attributes. In *Beverages* (Vol. 7, Issue 3). MDPI AG. <https://doi.org/10.3390/beverages7030048>
- Ganatsios, V., Nigam, P., Plessas, S., & Terpou, A. (2021b). Kefir as a functional beverage gaining momentum towards its health promoting attributes. In *Beverages* (Vol. 7, Issue 3). MDPI AG. <https://doi.org/10.3390/beverages7030048>
- Ghasemlou, M., Khodaiyan, F., & Gharibzahedi, S. M. T. (2012). Enhanced Production of Iranian Kefir Grain Biomass by Optimization and Empirical Modeling of Fermentation Conditions Using Response Surface Methodology. *Food and Bioprocess Technology*, 5(8), 3230–3235. <https://doi.org/10.1007/s11947-011-0575-x>
- Gökırmaklı, Ç., Gün, İ., Kartal, M. O., & Güzel-Seydim, Z. B. (2025). Antioxidant Capacity, Volatile Compounds, Microbial, Chemical and Sensory Properties of Plum (*Prunus domestica*) Juice Water Kefir. *Discover Food*, 5(33), 1–10. <https://doi.org/10.1007/s44187-025-00297-7>
- Gul, O., Mortas, M., Atalar, I., Dervisoglu, M., & Kahyaoglu, T. (2015). Manufacture and characterization of kefir made from cow and buffalo milk, using kefir grain and starter culture. *Journal of Dairy Science*, 98(3), 1517–1525. <https://doi.org/10.3168/jds.2014-8755>
- Gulitz, A., Stadie, J., Wenning, M., Ehrmann, M. A., & Vogel, R. F. (2011). The microbial diversity of water kefir. *International Journal of Food Microbiology*, 151(3), 284–288. <https://doi.org/10.1016/j.ijfoodmicro.2011.09.016>
- Guzel-Seydim, Z. B., Gökırmaklı, Ç., & Greene, A. K. (2021a). A comparison of milk kefir and water kefir: Physical, chemical, microbiological and functional properties. *Trends in Food Science and Technology*, 113(March), 42–53. <https://doi.org/10.1016/j.tifs.2021.04.041>
- Guzel-Seydim, Z. B., Gökırmaklı, Ç., & Greene, A. K. (2021b). A comparison of milk kefir and water kefir: Physical, chemical, microbiological and functional properties. In *Trends in Food Science and Technology* (Vol. 113, pp. 42–53). Elsevier Ltd. <https://doi.org/10.1016/j.tifs.2021.04.041>



- Harbah, R. A., Meledina, T. V., & Morozov, A. A. (2020). *The effect of yeast growth stages on the absorption of polyphenols*. 18, 1673–1679.
- Hartman, A. M., Jumde, V. R., Elgaher, A. M., Te Poele, E. M., Dijkhuizen, L., & Hirsch, A. K. H. (2021). Potential Dental Biofilm Inhibitors Dynamic Combinatorial Chemistry Affords Sugar-Based.pdf. *ChemMedChem*, 16, 113–123. <https://doi.org/doi.org/10.1002/cmdc.202000222> 1
- Hoehle, S. I., Pfeiffer, E., Sólyom, A. M., & Metzler, M. (2006). Metabolism of curcuminoids in tissue slices and subcellular fractions from rat liver. *Journal of Agricultural and Food Chemistry*, 54(3), 756–764. <https://doi.org/10.1021/jf058146a>
- Jantan, I., Saputri, F. C., Qaisar, M. N., & Buang, F. (2012). Correlation between Chemical Composition of *Curcuma domestica* and *Curcuma xanthorrhiza* and Their Antioxidant Effect on Human Low-Density Lipoprotein Oxidation. *Evidence-Based Complementary and Alternative Medicine*, 2012(Ldl). <https://doi.org/10.1155/2012/438356>
- Jati, P. T., Wiradiestia, D., Altway, A., Winardi, S., & Machmudah, S. (2024). Extraction Process Optimization of Curcumin from *Curcuma xanthorrhiza* Roxb. with Supercritical Carbon Dioxide Using Ethanol as a Cosolvent. *ACS Omega*. <https://doi.org/10.1021/acsomega.3c07497>
- Joshi, R. K. (2012). Comparative Analysis by GC-MS and in vitro Antimicrobial Activity of the Essential Oils of Noxious Weed (*Lantana camara* L.) from Western Ghats Region of North West Karnataka, India. *Journal of Biologically Active Products from Nature*, 2(3), 135–143. <https://doi.org/10.1080/22311866.2012.10719120>
- Kasai, H., Yamane, Y., Ikegami-Kawai, M., & Sudo, H. (2019). Analysis of Compounds of *Curcuma* Rhizome Using Mass Spectrometry and Investigation of the Antioxidant Activity of Rhizome Extracts. *Medicinal & Aromatic Plants*, 08(04). <https://doi.org/10.35248/2167-0412.19.8.336>
- Kharat, M., Du, Z., Zhang, G., & McClements, D. J. (2017). Physical and Chemical Stability of Curcumin in Aqueous Solutions and Emulsions: Impact of pH, Temperature, and Molecular Environment. *Journal of Agricultural and Food Chemistry*, 65(8), 1525–1532. <https://doi.org/10.1021/acs.jafc.6b04815>
- Klau, M. E., Roheati, E., Rafi, M., Artika, I. M., Ambarsari, L., & Nurcholis, W. (2023). Metabolite Profiling of *Curcuma zanthorrhiza* Varieties Grown in Different Regions Using UHPLC-Q-Orbitrap- HRMS and Chemometrics Analysis. *Biointerface Research in Applied Chemistry*, 13(1), 1–13.
- Kumar, A., Dhamgaye, S., Maurya, I. K., Singh, A., Sharma, M., & Prasad, R. (2014). Curcumin Targets Cell Wall Integrity via Calcineurin-Mediated Signaling in



- Candida albicans*. *Antimicrobial Agents and Chemotherapy*, 58(1), 167–175. <https://doi.org/10.1128/AAC.01385-13>
- La Torre, C., Caputo, P., & Fazio, A. (2025). Effect of Milk and Water Kefir Grains on the Nutritional Profile and Antioxidant Capacity of Fermented Almond Milk. *Molecules*, 30(3), 1–23. <https://doi.org/10.3390/molecules30030698>
- Laureys, D., Aerts, M., Vandamme, P., & De Vuyst, L. (2018). Oxygen and diverse nutrients influence the water kefir fermentation process. *Food Microbiology*, 73, 351–361. <https://doi.org/10.1016/j.fm.2018.02.007>
- Laureys, D., Aerts, M., Vandamme, P., & Vuyst, L. De. (2019). The Buffer Capacity and Calcium Concentration of Water Influence the Microbial Species Diversity , Grain Growth , and Metabolite Production During Water Kefir Fermentation. *Frontiers in Microbiology*, 10(December), 1–11. <https://doi.org/10.3389/fmicb.2019.02876>
- Laureys, D., & De Vuyst, L. (2014). Microbial species diversity, community dynamics, and metabolite kinetics of water Kefir fermentation. *Applied and Environmental Microbiology*, 80(8), 2564–2572. <https://doi.org/10.1128/AEM.03978-13>
- Laureys, D., & De Vuyst, L. (2017). The water kefir grain inoculum determines the characteristics of the resulting water kefir fermentation process. *Journal of Applied Microbiology*, 122(3), 719–732. <https://doi.org/10.1111/jam.13370>
- Laureys, D., Leroy, F., Hauffman, T., Raes, M., Aerts, M., Vandamme, P., & De Vuyst, L. (2021). The Type and Concentration of Inoculum and Substrate as Well as the Presence of Oxygen Impact the Water Kefir Fermentation Process. *Frontiers in Microbiology*, 12(February), 1–13. <https://doi.org/10.3389/fmicb.2021.628599>
- Laureys, D., Leroy, F., Vandamme, P., & De Vuyst, L. (2022). Backslopping Time, Rinsing of the Grains During Backslopping, and Incubation Temperature Influence the Water Kefir Fermentation Process. *Frontiers in Microbiology*, 13(May), 1–12. <https://doi.org/10.3389/fmicb.2022.871550>
- Leroi, F., & Pidoux, M. (1993). Detection of Interactions Between Yeasts and Lactic Acid Bacteria Isolated from Sugary Kefir Grains. *Journal of Applied Bacteriology*, 74(1), 48–53. <https://doi.org/10.1111/j.1365-2672.1993.tb02995.x>
- Li, B., Li, X., Lin, H., & Zhou, Y. (2018). Curcumin as a Promising Antibacterial Agent: Effects on Metabolism and Biofilm Formation in *S. mutans*. *BioMed Research International*, 2018. <https://doi.org/10.1155/2018/4508709>
- Li, B., Pan, T., Lin, H., & Zhou, Y. (2020). The enhancing antibiofilm activity of curcumin on *Streptococcus mutans* strains from severe early childhood caries. *BMC Microbiology*, 20(1), 1–11. <https://doi.org/10.1186/s12866-020-01975-5>
- Lindsay, R. C. (1996). Fennema's Food Chemistry. In *Food Additives* (pp. 778–780).



- Liu, J. R., & Lin, C. W. (2000). Production of kefir from soymilk with or without added glucose, lactose, or sucrose. *Journal of Food Science*, 65(4), 716–719. <https://doi.org/10.1111/j.1365-2621.2000.tb16078.x>
- Lukitaningsih, E., Rohman, A., Rafi, M., Nurrulhidayah, A. F., & Windarsih, A. (2020). In vivo antioxidant activities of *Curcuma longa* and *Curcuma xanthorrhiza*: A review. *Food Research*, 4(1), 13–19. [https://doi.org/10.26656/fr.2017.4\(1\).172](https://doi.org/10.26656/fr.2017.4(1).172)
- Luo, M., Han, Y., Sun, Y., Wu, Y., Bechtel, T. D., Wong, S., Shen, P., Du, H., Gibbons, J. G., & Xiao, H. (2025). Variability of Lactic Acid Bacteria in Curcumin Metabolism and Its Biological Implications. *Journal of Agricultural and Food Chemistry*. <https://doi.org/10.1021/acs.jafc.4c08726>
- Lynch, K. M., Wilkinson, S., Daenen, L., & Arendt, E. K. (2021). An update on water kefir: Microbiology, composition and production. *International Journal of Food Microbiology*, 345(January), 109128. <https://doi.org/10.1016/j.ijfoodmicro.2021.109128>
- Machmudah, S., Mahardika, R. P., Almadilla, S., Winardi, S., Wahyudiono, N., Kanda, H., & Goto, M. (2022). Enhancement of *Curcuma xanthorrhiza* Roxb Phytochemical Dissolution via Micronization Using a Supercritical Antisolvent Technique. *ACS Omega*, 7(7), 6345–6353. <https://doi.org/10.1021/acsomega.1c06911>
- Martínez-Torres, A., Gutiérrez-Ambrocio, S., Heredia-del-Orbe, P., Villa-Tanaca, L., & Hernández-Rodríguez, C. (2017). Inferring The Role of Microorganisms in Water Kefir Fermentations. *International Journal of Food Science and Technology*, 52(2), 559–571. <https://doi.org/10.1111/ijfs.13312>
- Minarti, M., Ariani, N., Megawati, M., Hidayat, A., Hendra, M., Primahana, G., & Darmawan, A. (2024). Potential Antioxidant Activity Methods DPPH, ABTS, FRAP, Total Phenol and Total Flavonoid Levels of *Macaranga hypoleuca* (Reichb. f. & Zoll.) Leaves Extract and Fractions. *E3S Web of Conferences*, 503, 1–13. <https://doi.org/10.1051/e3sconf/202450307005>
- Moinas, M., Horisberger, M., & Bauer, H. (1980). The Structural Organization of the Tibi Grain as Revealed by Light, Scanning and Transmission Microscopy. *Archives of Microbiology*, 128, 157–161.
- Nenadis, N., Lazaridou, O., & Tsimidou, M. Z. (2007). Use of reference compounds in antioxidant activity assessment. *Journal of Agricultural and Food Chemistry*, 55(14), 5452–5460. <https://doi.org/10.1021/jf070473q>
- Nishida, M., Nishiumi, S., Mizushina, Y., Fujishima, Y., Yamamoto, K., Masuda, A., Mizuno, S., Fujita, T., Morita, Y., Katsumi, H., Yoshida, H., Azuma, T., & Yoshida, M. (2009). Monoacetylcurcumin strongly regulates inflammatory responses



- through inhibition of NF- $\kappa$ B activation. *International Journal of Molecular Medicine*, 23(4), 521–527. <https://doi.org/10.3892/ijmm>
- Nurcholis, W., Munshif, A. A., & Ambarsari, L. (2018). Xanthorrhizol contents,  $\alpha$ -glucosidase inhibition, and cytotoxic activities in ethyl acetate fraction of *Curcuma xanthorrhiza* accessions from Indonesia. *Revista Brasileira de Farmacognosia*, 28(1), 44–49. <https://doi.org/10.1016/j.bjp.2017.11.001>
- Ozcelik, F., Akan, E., & Kinik, O. (2021). Use of Cornelian cherry, hawthorn, red plum, rosehip and pomegranate juices in the production of water kefir beverages. *Food Bioscience*, 42, 101219. <https://doi.org/10.1016/j.fbio.2021.101219>
- Palareti, G., Legnani, C., Cosmi, B., Antonucci, E., Erba, N., Poli, D., Testa, S., & Tosetto, A. (2016). Comparison between different D-Dimer cutoff values to assess the individual risk of recurrent venous thromboembolism: Analysis of results obtained in the DULCIS study. *International Journal of Laboratory Hematology*, 38(1), 42–49. <https://doi.org/10.1111/ijlh.12426>
- Papadopoulou, D., Chrysikopoulou, V., Rampaouni, A., & Tsoupras, A. (2024). Antioxidant and anti-inflammatory properties of water kefir microbiota and its bioactive metabolites for health promoting bio-functional products and applications. *AIMS Microbiology*, 10(4), 756–811. <https://doi.org/10.3934/microbiol.2024034>
- Paszkot, J., & Kawa-rygielska, J. (2022). *Yeast Strains and Wort Color as Factors Affecting Effects of the Ethanol Fermentation Process*.
- Patel, S. H., Tan, J. P., Börner, R. A., Zhang, S. J., Priour, S., Lima, A., Ngom-Bru, C., Cotter, P. D., & Duboux, S. (2022). A temporal view of the water kefir microbiota and flavour attributes. *Innovative Food Science and Emerging Technologies*, 80. <https://doi.org/10.1016/j.ifset.2022.103084>
- Pavlečić, M., Novak, M., Trontel, A., Marđetko, N., Tominac, V. P., Dobrinčić, A., Kralj, M., & Šantek, B. (2024). The Production of Water Kefir Drink with the Addition of Dried Figs in the Horizontal Rotating Tubular Bioreactor. *Foods*, 13(17). <https://doi.org/10.3390/foods13172834>
- Pendón, M. D., Bengoa, A. A., Iraporda, C., Medrano, M., Garrote, G. L., & Abraham, A. G. (2021). Water kefir factors affecting grain growth and health-promoting properties of. *Journal of Applied Microbiology*, 133(1), 162–180. <https://doi.org/https://doi.org/10.1111/jam.15385>
- Pianpumepong, P., Anal, A. K., Doungchawee, G., & Noomhorm, A. (2012). Study on enhanced absorption of phenolic compounds of *Lactobacillus*-fermented turmeric (*Curcuma longa* Linn.) beverages in rats. *International Journal of Food Science and Technology*, 47(11), 2380–2387. <https://doi.org/10.1111/j.1365-2621.2012.03113.x>



- Pidoux, M., Brillouet, J. M., & Quemener, B. (1988). Characterization of the polysaccharides from a *Lactobacillus brevis* and from sugary kefir grains. *Biotechnology Letters*, *10*(6), 415–420. <https://doi.org/10.1007/BF01087442>
- Pidoux, M., Marshall, V. M., Zanoni, P., & Brooker, B. (1990). Lactobacilli isolated from sugary kefir grains capable of polysaccharide production and minicell formation. *Journal of Applied Bacteriology*, *69*(3), 311–320. <https://doi.org/10.1111/j.1365-2672.1990.tb01521.x>
- Pogačić, T., Maillard, M. B., Leclerc, A., Hervé, C., Chuat, V., Valence, F., & Thierry, A. (2016). Lactobacillus and Leuconostoc volatilomes in cheese conditions. *Applied Microbiology and Biotechnology*, *100*(5), 2335–2346. <https://doi.org/10.1007/s00253-015-7227-4>
- Priyadarsini, K. I. (2014). The chemistry of curcumin: From extraction to therapeutic agent. *Molecules*, *19*(12), 20091–20112. <https://doi.org/10.3390/molecules191220091>
- Rahmat, E., Lee, J., & Kang, Y. (2021). Javanese Turmeric (*Curcuma xanthorrhiza* Roxb.): Ethnobotany, Phytochemistry, Biotechnology, and Pharmacological Activities. In *Evidence-based Complementary and Alternative Medicine* (Vol. 2021). Hindawi Limited. <https://doi.org/10.1155/2021/9960813>
- Rahmatalla, S. A., Abdalla, M. O., Rahmatalla, S. A., Alazeem, L. A., Osman, M., & Abdalla, M. (2017). Microbiological quality of set yoghurt supplemented with turmeric powder (*Curcuma longa*) during storage. *Asian Journal of Agriculture and Food Sciences*, *March*, 2321–1571. <https://www.researchgate.net/publication/317065284>
- Ramdani, E. D., Marlupi, U. D., Sinambela, J., & Tjandrawinata, R. R. (2016). A New Method of Xanthorrhizol Isolation from the Rhizome Extract of *Curcuma xanthorrhiza*. *J. Biosci*, *4*(9), 732–737. <http://saspublisher.com/sajb/732>
- Randazzo, W., Corona, O., Guarcello, R., Francesca, N., Germanà, M. A., Erten, H., Moschetti, G., & Settanni, L. (2016). Development of new non-dairy beverages from Mediterranean fruit juices fermented with water kefir microorganisms. *Food Microbiology*, *54*, 40–51. <https://doi.org/10.1016/j.fm.2015.10.018>
- ReifB, J. (1990). Metabolic activity of Tibi grains. *Unters Forsch*, *191*, 462–465.
- Rosidi, A., Khomsan, A., Setiawan, B., & Briawan, D. (2014). Potensi Temulawak (*Curcuma xanthorrhiza* Roxb) Antioksidan. *Prosiding Seminar Nasional Dan Internasional*, *5*, 1–8.
- Ruiz Rodríguez, L. G., Zamora Gasga, V. M., Pescuma, M., Van Nieuwenhove, C., Mozzi, F., & Sánchez Burgos, J. A. (2021). Fruits and fruit by-products as sources of bioactive compounds. Benefits and trends of lactic acid fermentation in the



- development of novel fruit-based functional beverages. *Food Research International*, 140. <https://doi.org/10.1016/j.foodres.2020.109854>
- Rum, S. N., Kawiji, K., & Arviani, S. (2017). Antioxidant capacity of temulawak drink (*Curcuma xanthorrhiza*) with white crystal sugar cane, red crystal sugar cane, palm sugar, and arenga palm sugar. *Biofarmasi Journal of Natural Product Biochemistry*, 14(2), 39–46. <https://doi.org/10.13057/biofar/f140201>
- 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(January). <https://doi.org/10.1016/j.ijbiomac.2023.123470>
- Salve, R. V., Chavan, R., Pawase, P., Kelapure, N., Jaju, R., & Wadatkar, H. (2023). The Impact of the Fermentation Process on Bioactive Compounds in Turmeric: A Review. *Journal of Food Chemistry & Nanotechnology*, 9, 367–374. <https://doi.org/10.17756/jfcn.2023-s1-046>
- Şanlıer, N., Gökçen, B. B., & Sezgin, A. C. (2019). Health benefits of fermented foods. *Critical Reviews in Food Science and Nutrition*, 59(3), 506–527. <https://doi.org/10.1080/10408398.2017.1383355>
- Sari, A. R. S., Nurwantoro, N., Hintono, A., & Mulyani, S. (2020). Pengaruh Penggunaan F1 Grain Kefir sebagai Starter terhadap The effect of using F1 grain kefir as a starter on alcohol content, total yeast and preference for optima kefir. *Jurnal Teknologi Pangan*, 4(2), 137–144. <https://doi.org/https://doi.org/10.14710/jtp.2020.24477>
- Schneedorf, J. M. (2012). Kefir D'Aqua and its probiotic properties. In *Probiotic in animals*. IntechOpen.
- Septama, A. W., Tasfiyati, A. N., Kristiana, R., & Jaisi, A. (2022). Chemical Profiles of Essential Oil from Javanese Turmeric (*Curcuma xanthorrhiza* Roxb.), Evaluation of its Antibacterial and Antibiofilm Activities Against Selected Clinical Isolates. *South African Journal of Botany*, 146, 728–734. <https://doi.org/10.1016/j.sajb.2021.12.017>
- Septiana, A., & Wuryatmo, E. (2022). Effect of Ethanol Concentration and Extraction Time with Microwave Assisted Extraction on Antioxidant Activity of Temulawak-Extract (*Curcuma Xanthorrhiza*.Roxb). *Journal of Functional Food and Nutraceutical*, 3(2), 63–69. <https://doi.org/10.33555/jffn.v3i2.86>
- Simamora, A., Timotius, K. H., Yerer, M. B., Setiawan, H., & Mun'im, A. (2022). Xanthorrhizol, a potential anticancer agent, from *Curcuma xanthorrhiza* Roxb. *Phytomedicine*, 105(February). <https://doi.org/10.1016/j.phymed.2022.154359>



- Sin, P. Y., Tan, S. H., Asras, M. F. F., Lee, C. M., & Lee, T. C. (2024). Probiotic Growth Pattern and Physicochemical Evaluation of Water Kefir Fermentation. *Malaysian Applied Biology*, 53(2), 21–30. <https://doi.org/10.55230/mabjournal.v53i2.2742>
- Situm, T., Heacock, H., & McIntyre, L. (2020). A comparison of ethanol content of water kefir products to kombucha products and their compliance to British Columbia's Liquor Control and Licensing Act. *BCIT Environmental Public Health Journal*. <https://doi.org/10.47339/ephj.2020.21>
- Skąpska, S., Marszałek, K., Woźniak, Ł., Szczepańska, J., Danielczuk, J., & Zawada, K. (2020). The development and consumer acceptance of functional fruit-herbal beverages. *Foods*, 9(12). <https://doi.org/10.3390/foods9121819>
- Skrzypczak-Pietraszek, E., Słota, J., & Pietraszek, J. (2014). The influence of L-phenylalanine, methyl jasmonate and sucrose concentration on the accumulation of phenolic acids in *Exacum affine* Balf. f. ex Regel shoot culture. *Acta Biochimica Polonica*, 61(1), 47–53. [https://doi.org/10.18388/abp.2014\\_1922](https://doi.org/10.18388/abp.2014_1922)
- Srimuangwong, K., Tocharus, C., Chintana, P. Y., Suksamrarn, A., & Tocharus, J. (2012). Hexahydrocurcumin enhances inhibitory effect of 5-fluorouracil on HT-29 human colon cancer cells. *World Journal of Gastroenterology*, 18(19), 2383–2389. <https://doi.org/10.3748/wjg.v18.i19.2383>
- Stadie, J., Gulitz, A., Ehrmann, M. A., & Vogel, R. F. (2013). Metabolic activity and symbiotic interactions of lactic acid bacteria and yeasts isolated from water kefir. *Food Microbiology*, 35(2), 92–98. <https://doi.org/10.1016/j.fm.2013.03.009>
- Sugiyama, Y., Kawakishi, S., & Osawa, T. (1996). Involvement of the  $\beta$ -Diketone Moiety in the Antioxidative Mechanism of Tetrahydrocurcumin. *Biochemical Pharmacology*, 52(4), 519–525. [https://doi.org/10.1016/0006-2952\(96\)00302-4](https://doi.org/10.1016/0006-2952(96)00302-4)
- Susanto, S. W., & Ranggani, M. D. (2022). Aktivitas Antioksidan Ekstrak Etanol Rimpang *Curcuma xanthorrhiza* Roxb. dan Asam Askorbat. *Jurnal Kedokteran Gigi Terpadu*, 4(1), 83–88.
- Tannesen, H. H., Masson, M., & Loftsson, T. (2002). Studies of curcumin and curcuminoids. XXVII. Cyclodextrin complexation: solubility, chemical and photochemical stability. *International Journal of Pharmaceutics*, 244(1–2), 127–135. [https://doi.org/https://doi.org/10.1016/S0378-5173\(02\)00323-X](https://doi.org/https://doi.org/10.1016/S0378-5173(02)00323-X)
- Tireki, S. (2024). Influence of Water Properties on the Physicochemical and Sensorial Parameters of Water Kefir. *Journal of Culinary Science and Technology*. <https://doi.org/10.1080/15428052.2024.2303002>
- Tripathy, S., Verma, D. K., Thakur, M., Patel, A. R., Srivastav, P. P., Singh, S., Gupta, A. K., Chávez-González, M. L., Aguilar, C. N., Chakravorty, N., Verma, H. K., & Utama, G. L. (2021). Curcumin Extraction, Isolation, Quantification and Its



- Application in Functional Foods: A Review With a Focus on Immune Enhancement Activities and COVID-19. *Frontiers in Nutrition*, 8. <https://doi.org/10.3389/fnut.2021.747956>
- Turkmen, N., Akal, C., & Özer, B. (2019). Probiotic dairy-based beverages: A review. *Journal of Functional Foods*, 53, 62–75. <https://doi.org/10.1016/j.jff.2018.12.004>
- Tzavaras, D., Papadelli, M., & Ntaikou, I. (2022). From Milk Kefir to Water Kefir: Assessment of Fermentation Processes, Microbial Changes and Evaluation of the Produced Beverages. *Fermentation*, 8(3). <https://doi.org/10.3390/fermentation8030135>
- Vallejo, F., Marín, J. G., & Tomás-Barberán, F. A. (2012). Phenolic compound content of fresh and dried figs (*Ficus carica* L.). *Food Chemistry*, 130(3), 485–492. <https://doi.org/10.1016/j.foodchem.2011.07.032>
- Verce, M., De Vuyst, L., & Weckx, S. (2019). Shotgun metagenomics of a water kefir fermentation ecosystem reveals a novel *Oenococcus* species. *Frontiers in Microbiology*, 10(MAR), 1–16. <https://doi.org/10.3389/fmicb.2019.00479>
- Vitas, J., Vukmanović, S., Čakarević, J., Popović, L., & Malbaša, R. (2020). Kombucha Fermentation of Six Medicinal Herbs: Chemical Profile and Biological Activity. *Chemical Industry and Chemical Engineering Quarterly*, 26(2), 157–170. <https://doi.org/10.2298/CICEQ190708034V>
- Vogel, R. F. (2019). Proteomic Analysis of *Lactobacillus nagelii* in the Presence of *Saccharomyces cerevisiae* Isolated From Water Kefir and Comparison With *Lactobacillus hordei*. *Frontiers in Microbiology*, 10(February). <https://doi.org/10.3389/fmicb.2019.00325>
- 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, 1–10. <https://doi.org/10.1016/j.jfoodeng.2024.112254>
- Wang, Y., Lin, B., & Li, Z. (2022). Effect of *Lactobacillus plantarum* Fermentation on Metabolites in Lotus Leaf Based on Ultra-High-Performance Liquid Chromatography–High-Resolution Mass Spectrometry. *Fermentation*, 8(11). <https://doi.org/10.3390/fermentation8110599>
- Wang, Y., Wang, X., Xu, Y., Li, Y., Liu, Y., & Lin, X. (2025). Volatile flavor characteristics and microbial fermentation differences of water kefir grains from different origins. *European Food Research and Technology*. <https://doi.org/10.1007/s00217-025-04823-w>



- Yerlikaya, O., Akan, E., & Kinik, Ö. (2022). The metagenomic composition of water kefir microbiota. *International Journal of Gastronomy and Food Science*, 30. <https://doi.org/10.1016/j.ijgfs.2022.100621>
- Yoosungnoen, B., Bhattarakosol, P., Changtam, C., & Patumraj, S. (2016). Effects of Tetrahydrocurcumin on Tumor Growth and Cellular Signaling in Cervical Cancer Xenografts in Nude Mice. *BioMed Research International*, 2016, 1–11. <https://doi.org/10.1155/2016/1781208>
- Yuan, G., Guan, Y., Yi, H., Lai, S., Sun, Y., & Cao, S. (2021). Antibacterial Activity and Mechanism of Plant Flavonoids to Gram-Positive Bacteria Predicted from Their Lipophilicities. *Scientific Reports*, 11(1), 1–15. <https://doi.org/10.1038/s41598-021-90035-7>
- Yusufali, Z., Follett, P., Wall, M., & Sun, X. (2024). Physiochemical and Sensory Properties of a Turmeric, Ginger, and Pineapple Functional Beverage with Effects of Pulp Content. *Foods*, 13(5). <https://doi.org/10.3390/foods13050718>
- 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>