

Enhancing Bioactive Compounds and Antioxidant Activity in Fruit Juices via Lactic Acid Bacteria

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Outline

1. Introduction
2. Fermentation of kiwifruit juice from two cultivars by probiotic bacteria: Bioactive phenolics, antioxidant activities and flavor volatiles
3. Effect of *Lactobacillus plantarum* and *Lactobacillus acidophilus* fermentation on antioxidant activity and metabolomic profiles of loquat juice
4. Conclusion

Abstract

Non-communicable diseases (NCDs) such as cardiovascular disease, diabetes, and cancer remain major global health concerns. Fermentation offers a promising approach to enhance the nutritional and functional properties of fruits while extending shelf life. This study investigated the effects of lactic acid fermentation on the biochemical characteristics of two fruit juices, kiwifruit and loquat. In kiwifruit juice, *Lactobacillus helveticus* and *Lactobacillus plantarum* significantly increased total phenolic (TPC) and flavonoid contents (TFC), improved DPPH and ABTS radical scavenging activities, and promoted the conversion of complex phenolics such as chlorogenic acid and rutin into simpler forms like catechin, caffeic acid, and protocatechuic acid, resulting in enhanced antioxidant activity and aroma quality. In loquat juice, *Lactobacillus plantarum* and *Lactobacillus acidophilus* fermentation increased bioactive metabolites such as phenolic acids while reducing sugar content and improving color properties. Collectively, lactic acid fermentation improved the physicochemical, functional, and sensory qualities of both juices by enhancing phenolic conversion, metabolite diversity, and antioxidant potential, highlighting its potential for developing fruit-based functional beverages.

1 Wang, Z., Feng, Y., Yang, N., Jiang, T., Xu, H., & Lei, H. (2022). Fermentation of
2 Kiwifruit Juice from Two Cultivars by Probiotic Bacteria: Bioactive
3 Phenolics, Antioxidant Activities and Flavor Volatiles. *Food Chemistry*, 373,
4 131455. <https://doi.org/https://doi.org/10.1016/j.foodchem.2021.131455>
5 Meng, F.-B., Lei, Y.-T., Li, Q.-Z., Li, Y.-C., Deng, Y., & Liu, D.-Y. (2022). Effect of
6 *Lactobacillus plantarum* and *Lactobacillus acidophilus* Fermentation on
7 Antioxidant Activity and Metabolomic Profiles of Loquat Juice. *Lebensmittel-*
8 *Wissenschaft & Technologie*, 171, 114104.
9 <https://doi.org/https://doi.org/10.1016/j.lwt.2022.114104>

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