



UNCOVERING THE FLAVORS OF ANAEROBIC FERMENTATION IN COFFEE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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INTRODUCTION

Coffee flavor is a multifaceted outcome of intricate chemical reactions occurring during processing. Anaerobic fermentation, an innovative technique, has emerged as a potential tool to enhance coffee flavor complexity and quality. The coffee industry's growing interest in this technique underscores the need to comprehensively assess its effects on flavor characteristics.

OBJECTIVES

This study aims to systematically review and conduct a meta-analysis to investigate the influence of anaerobic fermentation on coffee flavor.

RESULT

The meta-analysis of diverse studies revealed noteworthy impacts of anaerobic fermentation on coffee flavor:

- **Increased Acidity**

Anaerobically fermented coffees exhibited a distinct rise in acidity compared to conventionally processed coffees.

- **Enhanced Sweetness**

Anaerobic fermentation led to heightened perceived sweetness in the coffee.

- **Intensified Aroma Complexity**

Aromas in anaerobically fermented coffees were notably more intricate and pronounced.

- **Improved Body**

Coffees subject to anaerobic fermentation demonstrated enhanced body and texture.

- **Enhanced Aftertaste**

Anaerobically fermented coffees showcased a more gratifying and persistent aftertaste.

CONCLUSION

Anaerobic fermentation significantly enhances coffee flavor—heightened acidity, increased sweetness, intensified aroma complexity, improved body, and enriched aftertaste. Industry stakeholders can leverage this technique for desired flavors, while ongoing research should refine practices for diverse coffee types and contexts. Anaerobic fermentation is a potent tool for elevated coffee flavor and processing advancement.

REFERENCES

Haile, M., Bae, H. M., & Kang, W. H. (2020). Comparison of the Antioxidant Activities and Volatile Compounds of Coffee Beans Obtained Using Digestive Bio-Processing (Elephant Dung Coffee) and Commonly Known Processing Methods. *Antioxidants*, 9(5), 408. <https://doi.org/https://doi.org/10.3390/antiox9050408>

Lee, L. W., Cheong, M. W., Curran, P., Yu, B., & Liu, S. Q. (2016). Modulation of coffee aroma via the fermentation of green coffee beans with *Rhizopus oligosporus*: I. Green coffee. *Food Chemistry*, 211, 916–924.

Wang, C., Sun, J., Lassabliere, B., Yu, B., Zhao, F., Zhao, F., Chen, Y., & Liu, S. Q. (2019). Potential of lactic acid bacteria to modulate coffee volatiles and effect of glucose supplementation: fermentation of green coffee beans and impact of coffee roasting. *Journal of the Science of Food and Agriculture*, 99(1), 409–420. <https://doi.org/10.1002/jsfa.9202>

METHOD



Literature Selection

Meta-Analysis

