# The impact of different starter cultures on the microbiome and volatilome profile of cv. Kalamata natural black olives during fermentation

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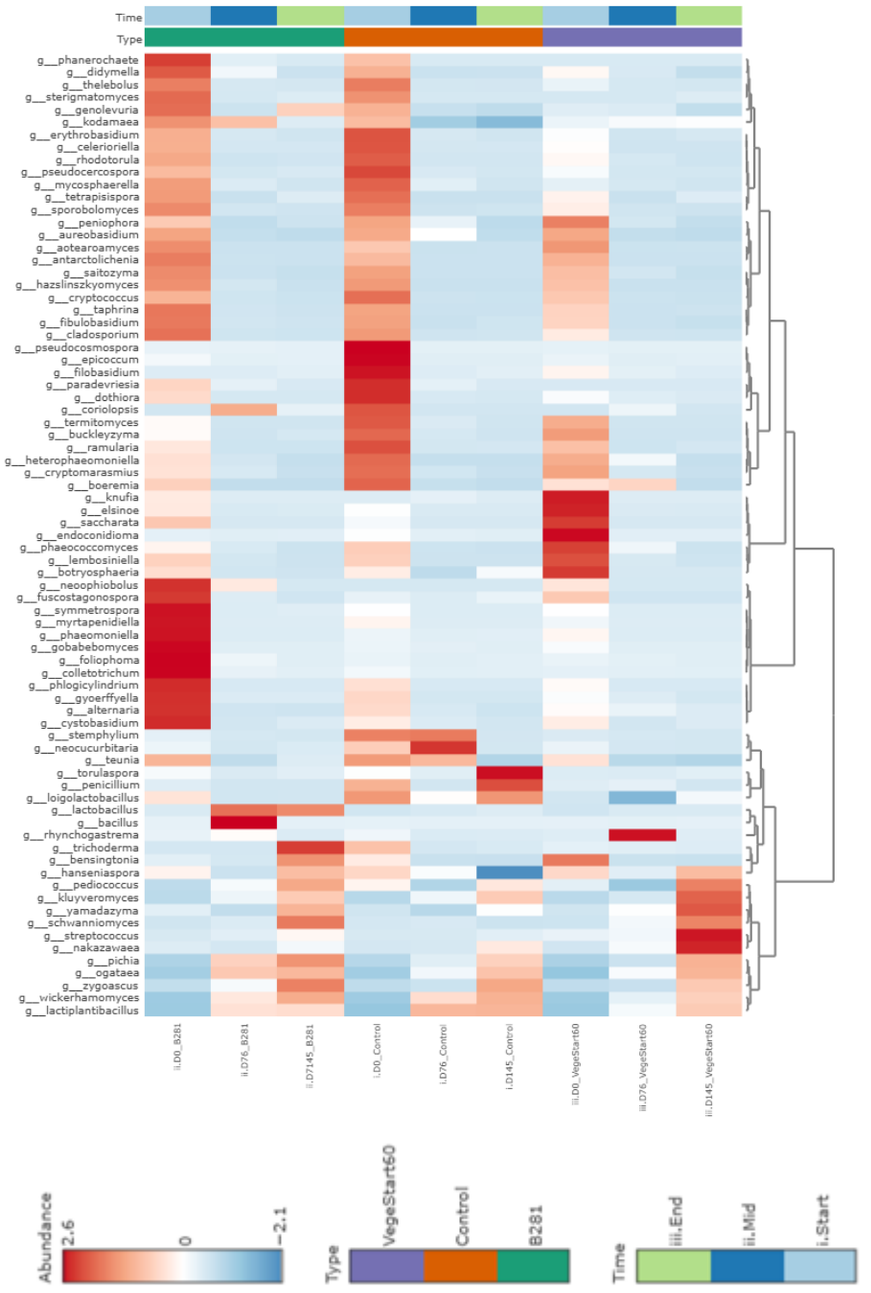
## Background

Table olives are among the most important fermented foods. Microbial ecology and subsequent production of volatiles are important for obtaining high-quality products. The purpose of this study was to investigate the fermentation of Kalamata black olives using different starter cultures to elucidate their impact on the microbiota and mycobiota and on the volatile profile during fermentation.

## Methods

Three fermentations were performed in 7% brine namely, (a) spontaneous fermentation (control), and inoculated fermentations with (b) *Lactiplantibacillus pentosus* B281, a probiotic strain isolated from table olives, and (c) a commercial starter culture containing *Lactiplantibacillus plantarum*. At the start (day 1), middle (day 76), and end (day 145) of fermentation, olives were analyzed using metataxonomics to identify the microbiota and mycobiota.




## Results

- In total, 107 volatile compounds were identified, including acids, alcohols, esters, carbonyls, hydrocarbons, phenols, terpenoids and miscellaneous compounds.
- Olives fermented with *L. pentosus* B281 presented a richer volatile profile at day 146 than the other two fermentations.
- On day 146, olives fermented with *L. pentosus* B281 were characterized by a richer mycobiota profile, similar to the volatile analysis, indicating the impact of starter cultures in shaping both the microbial ecology and the volatile profile.

## Conclusions

This is one of the first comprehensive evaluations of microbial and volatilome interactions in Kalamata natural black olives using advanced multi-omics tools.

### References

Kazou et al., 2020, doi.org/10.3390/microorganisms8050672

Mikrou et al., 2021, doi.org/10.3390/foods10051000