Evaluation of the impact of co-inoculation of bacteria and yeasts on the quality of coffee (Coffea canephora var. Conilon) through NMR analysis

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Introduction

Studies have been dedicated to the use of yeast and bacteria as starter cultures during fermentation, in order to modulate the chemical and sensory characteristics of coffee. However, this effect is still unknown for *C. canephora*. Thus, the objective of this study was to evaluate the chemical quality of the co-inoculation of yeast and bacteria during fermentation of *C. canephora*.

Materials/Methods

Fruits of the species *C. canephora* var. Conilon were submitted to co-inoculation of *S. cerevisiae* and *L. brevis*, during 24, 48, 72 and 96 hours of fermentation. The Nuclear Magnetic Resonance spectra were obtained according to the methodology followed by Brioschi Junior et al., [1].

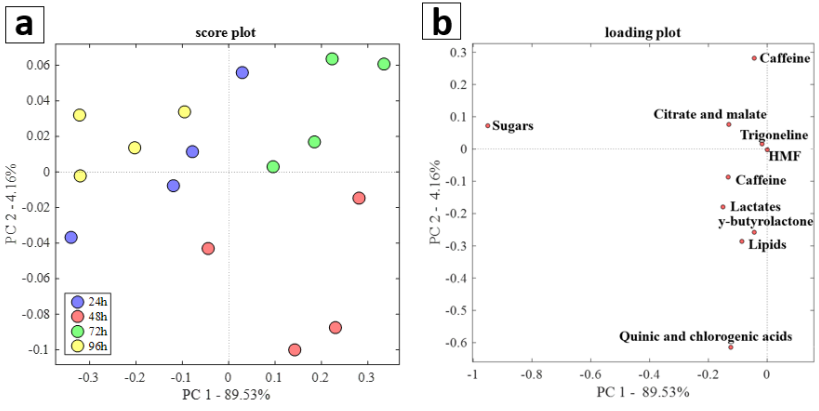

Figure 1: Evaluation of 24, 48, 72 and 96 hours of fermentation in the co-inoculation of S. cerevisiae and L. brevis using principal component analysis (PCA). (a) PCA Score plot. (b) PCA loading plot.

Results/Discussion

In this study, 10 compounds were identified (Figure 1). Although many of these compounds are directly related to coffee quality [2], the fermentation conditions employed were not able to suggest clear correlations between fermentation time and the formation of chemical compounds.

Conclusion/Perspectives

Despite the potential of the method, it is necessary to better understand the biochemical mechanisms involved in the bacteria-yeast interaction, as well as its impact on sensory modulation in C. canephora.

References:

1. Junior, D. B., et al. (2021). Microbial fermentation affects sensorial, chemical, and microbial profile of coffee under carbonic maceration. Food Chemistry, 342, 128296.
2. Agnoletti, B. Z., et al. (2022). Effect of fermentation on the quality of conilon coffee (Coffea canephora): Chemical and sensory aspects. Microchemical Journal, 182, 107966.