EFFECT OF *LACTIPLANTIBACILLUS PLANTARUM* AND *PICHIA KLUYVERI* ON COFFEE (*COFFEA ARABICA*) CUP SENSORY PROFILE DURING SEMI-WET COFFEE BEANS FERMENTATION.

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ABSTRACT

Coffee fermentation microorganisms are important to remove the mucilage of coffee beans and the development of desired profiles in the coffee beverage. The use of a starter culture in the fermentation process has gained interest since they can improve coffee quality. This study evaluated the effect of strains of *L. plantarum* and *P. kluyveri* on the fermentation of coffee (*Coffea arabica*) var. Costa Rica 95 under microaerophilic conditions.
The resultant microbial growth, beverage quality and sensory profile were compared with traditional (control) fermentation. The results showed that fermentation under microaerophilic conditions improves the sensory quality of coffee compared to the traditional treatment. The treatment inoculated with *L. plantarum* obtained the highest score in the coffee cupping, catalogued as special according to SCA, while traditional fermented coffee was classified as non-special. This study shows that the microaerophilic fermentation system, with or without the addition of starter cultures, improves the organoleptic characteristics of coffee and decreases the water consumption requirements in coffee processing, which is an interesting alternative for obtaining a quality beverage with distinctive flavor.

Key words: Starter culture, yeast, lactic acid bacteria, coffee beverage, sustainable process

METHODS

This study was carried out at “La Carmenza” farm (1835 m.s.n.m) located in Salgar, Antioquia, Colombia. The mass of coffee cherries (var. Costa Rica 95) was disinfected, subsequently dry-depulped and fermented (72h) in microaerophilic systems inoculated with 5% of one of each microorganism or a mixture of both (1:1). Fermented coffee was sun-dried until 11–12% moisture was reached. Finally roasting and sensory evaluation were performed according to the protocol described by the Specialty Coffee Association (SCA).

RESULTS

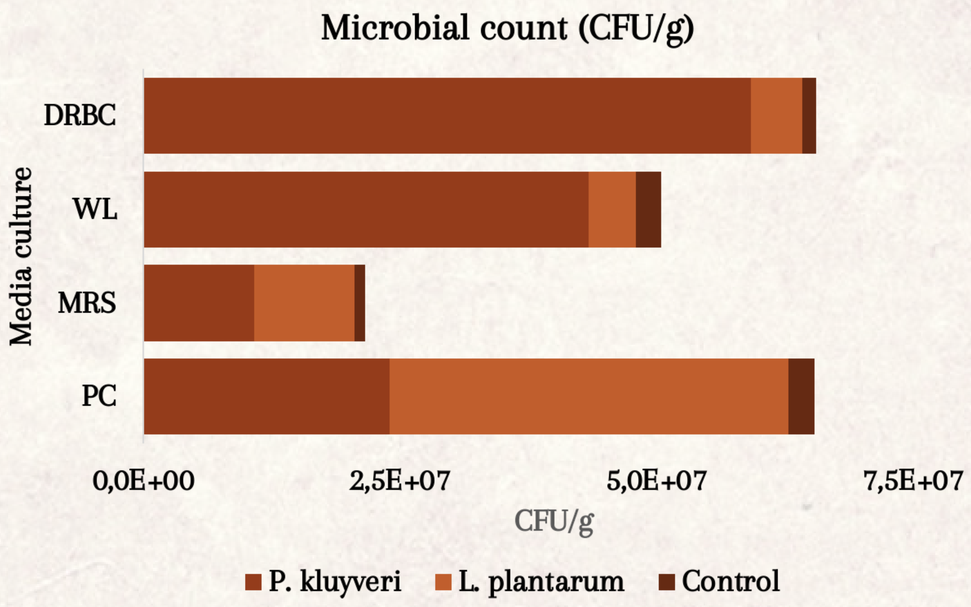

Figure 1. Viable counts of microbial populations (CFUÇ/g) in the coffee beans mass of the two inoculated fermentations and control (traditional) fermentation.

Fermentation assay	Description of sensory attributes	Final score
Microaerophilic	Chocolate, sugar cane, intense sweetness, plum, cherry, nutty.	80,1
P. kluyveri	Sugar cane, orange, aromatic, mint.	81,3
L. plantarum	Chocolate, nutty, citric, caramel.	79,9
Control	Mild sweet, cane, orange.	79,0

Table 2. Sensory characteristics and final score of coffee beverages produced with roasted coffee beans obtained from the fermentation under microaerophilic conditions (with or without inoculation of strains) and control (traditional) fermentation.

CONCLUSION

The sanitization of the depulping machinery, sterilization of coffee cherries, and subject the coffee beans in a microaerophilic fermentation; allow to standardize the and enhance the cup sensory profile. Furthermore, the addition of strains and the application of a microaerophilic process ameliorate the coffee cup quality. The implementation of the microaerophilic fermentation requires less water consumption compared to the traditional method. In order to explore alternatives with sustainable coffee processes and added value for coffee growers, it is crucial to continue research in this area.

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