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MAJOR ORGANIC ACIDS AND SUGARS IN KOMBUCHAS MADE WITH BLACK TEA, COFFEE CASCARA AND LEAVES

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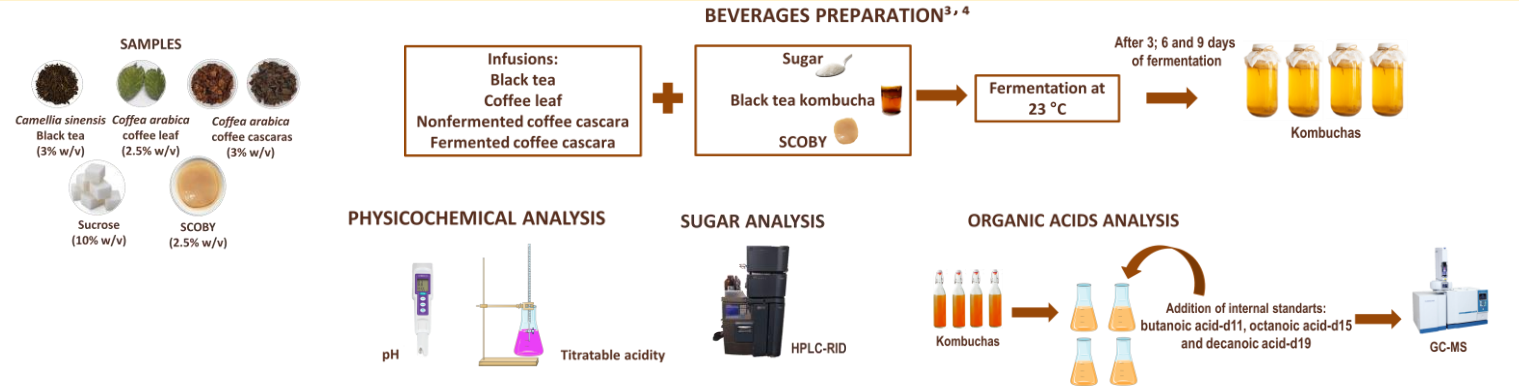
Introduction

Kombucha is traditionally produced through the fermentation of *Camellia sinensis* teas and sugar in a symbiotic association of bacteria and yeasts (SCOBY)[1]. Organic acids in kombucha are mainly produced by acetic acid bacteria, contributing to its taste[1]. Coffee harvesting and pruning generate cascara and leaves, respectively, as byproducts[2]. The aim of this study was to identify the main organic acids produced by kombucha fermentation of black tea, coffee cascara and coffee leaf.

Material/Methods



Statistical analysis ANOVA + Tukey (GraphPadPrism v.8.4.2)

Results/Discussion

Acidity

Increased during fermentation

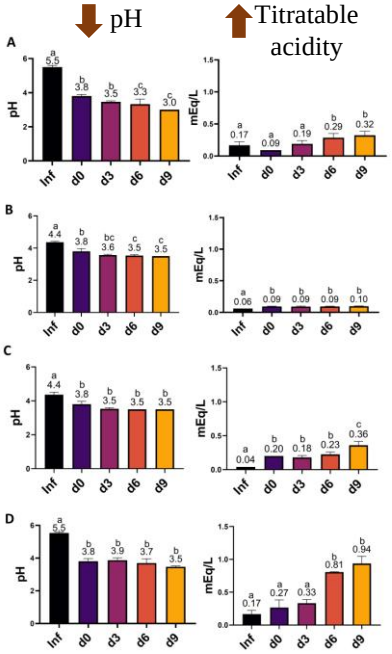


Figure 1. Physicochemical parameters (pH and titratable acidity) in (A) black tea, (B) non fermented coffee cascara, (C) fermented coffee cascara, (D) coffee leaf beverages. Inf: infusion; d0, d3, d6, d9: 0, 3, 6, 9 days of kombucha fermentation;

Sugars

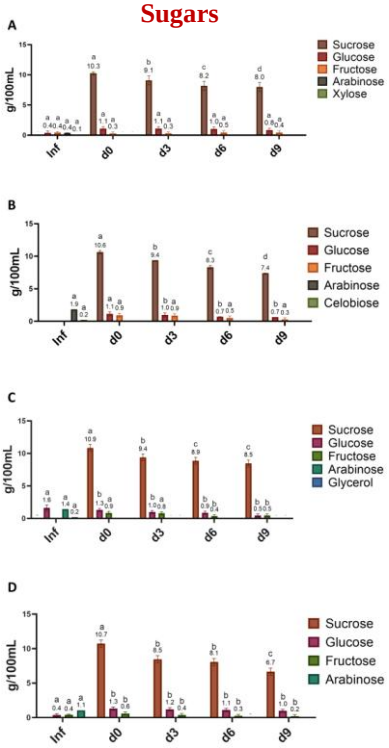
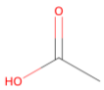


Figure 2. Sucrose and monosaccharides in (A) black tea, (B) non fermented coffee cascara, (C) fermented coffee cascara, (D) coffee leaf beverages. Inf: infusion; d0, d3, d6, d9: 0, 3, 6, 9 days of kombucha fermentation;

Glucose, fructose, arabinose and xylose were identified in all infusions. During kombuchas fermentation, the sucrose content decreased about 27%, on average. An increase in glucose and fructose contents was observed. (Fig 2)

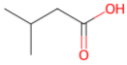
Main organic acids identified:



Acetic acid

Quant. in fermented coffee cascara infusion: 8.42±0.29 ng/mL

Main organic acid identified in all kombuchas: 1.30±1.97 to 749.2±0.04 ng/mL

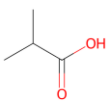


Isovaleric acid

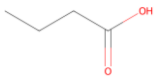
Identified in all kombuchas

From 0.9±0.0 to 17.7±0.7 ng/mL

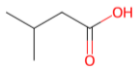
Additional organic acids identified in kombuchas:



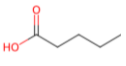
Isobutyric acid



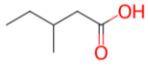
Butanoic acid



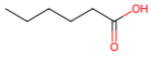
Isovaleric acid



Valeric acid



3-methylvaleric acid



Caproic acid

Conclusion/Perspectives: This study shows for the first time, the formation of other acids in addition to acetic acid, in kombuchas made with coffee byproducts. The contribution of this acids to health should be investigated.

References: 1. Tran et al. 2020 Rev Food Sci Food Saf., 19, 2050–2070; 2. DePaula, J.; Farah, A. Phenolic compounds in coffee and by-products. In: Coffee Science—Biotechnological Advances, 2022; Vol 1, 129–147. 3. . Sales et al. 2023 Foods, 12, 2710; 4. Sales et al. 2024 Foods, 13, 484