

Volatile and sensory profiles of *Coffea canephora* flowers and infusions

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Introduction: Despite the attractive aroma and flavor of coffee flowers, and the recent increase in consumption, their sensory relevance is still overlooked, especially those of *Coffea canephora* species (Figure 1). This study aimed to characterize the volatile and sensory profiles of *C. canephora* flowers and their infusions as part of an effort to value and consolidate their consumption worldwide.

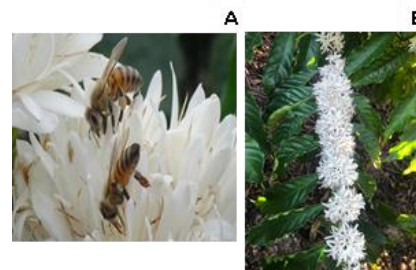


Figure 1: (A) Pollination of *Coffea canephora* flowers. (B) Flowers ready for harvest.

Materials/Methods: Flower composites from six selected genotypes of *C. canephora* cv. conilon, grown in Espírito Santo, Brazil, were collected after pollination and dried in a forced circulation oven at 40 °C for 3 days (Figure 2). The flowers and infusions were analyzed for volatile organic compounds (VOC) using GC-MS. The infusions were characterized by a sensory panel consisting of trained assessors (n=9, aged 28-58) from Brazil and the USA.



Figure 2: (A) Drying of *Coffea canephora* flowers. (B) Dried flowers.

Results/Discussion: Eighty five VOC were identified, considering all genotypes. Aldehydes, monoterpenes, esters and alcohols prevailed in order of number of compounds. Twenty five of them were previously identified in coffee husks¹ and 35 in dried leaves². Most compounds exclusive of the flowers were identified in all genotypes. They included aldehydes, alcohols, and monoterpenes. In the infusions, 38 VOC were identified. Monoterpenes and monoterpene alcohols prevailed.

Traditional sensory attributes of teas such as floral, herbal, and woody were most cited, in addition to specific attributes (Figure 3 and Table 1).



Figure 3: Specific sensory attributes of fragrance, aroma, and flavor reported for the individual coffee flower infusions by the sensory panel.

Table 1: Attributes perceived by the trained panel and the corresponding volatile compounds identified in this study.

	Corresponding volatile organic compounds
Jasmine	Benzyl acetate, benzyl alcohol, and linalool
Orange blossom	Methyl anthranilate, geranyl formate, and nerol
Honey	Benzene acetaldehyde, methyl phenyl acetate and phenyl ethyl alcohol
Green coffee	Hexanal, benzaldehyde, and hexanoic acid

The different genotypes presented significant differences in VOC composition and sensory characterization.

Conclusion/Perspectives: Considering the typically poor aroma of *C. canephora* seeds, compared to *C. arabica*, the aroma and flavor of the flower's infusions were surprisingly strong and pleasant, showing great market potential.

References:

(1):DePaula, J. et al. Foods 2022, 11(19), 3144, (2): DePaula, J. et al. Food Res. Int. 2023, 173, 113361.