

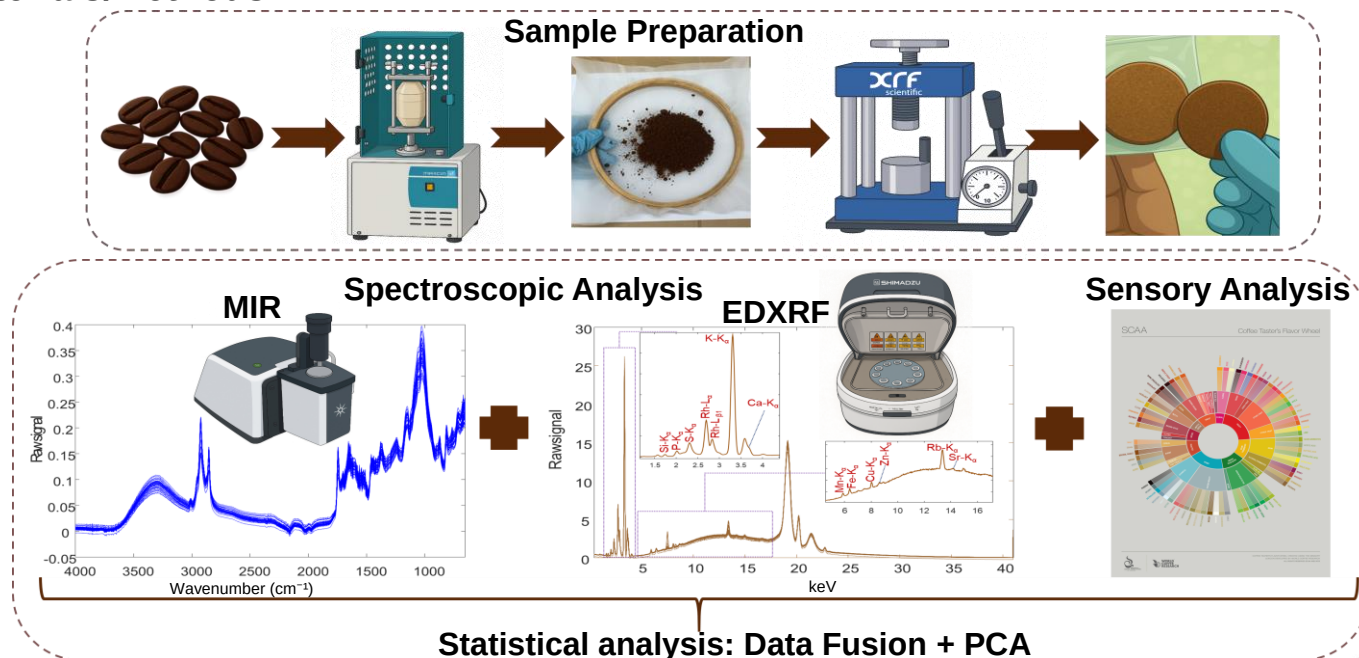
Spectroscopic Data Fusion to Investigate the Chemical Influence on the Quality of *Coffea canephora*

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Introduction

Coffee quality arises from interactions between chemical composition and sensory perception. This study investigated *Coffea canephora* (conilon and robusta) from seven different Brazilian locations, relating spectroscopic profiles to sensory attributes to identify chemical markers linked to quality differentiation.

Materials/Methods



Results/Discussion

Statistical analyses identified components differentiating coffees from seven locations. In EDXRF, K, Rb, Ni, Ca, Cu, P, and S stood out, while MIR spectra highlighted lipids, caffeine, chlorogenic acids, and carbohydrates. Integration with sensory data revealed negative correlations between markers and quality: higher potassium, CGA, and caffeine linked to lower sensory scores; copper affected Fragrance and Balance; other signals associated with lipids, CGA, carbohydrates, and proteins related to reduced Flavor, Acidity, Sweetness, Aftertaste, and Overall rating. These results underscore the role of chemical characterization in coffee quality.

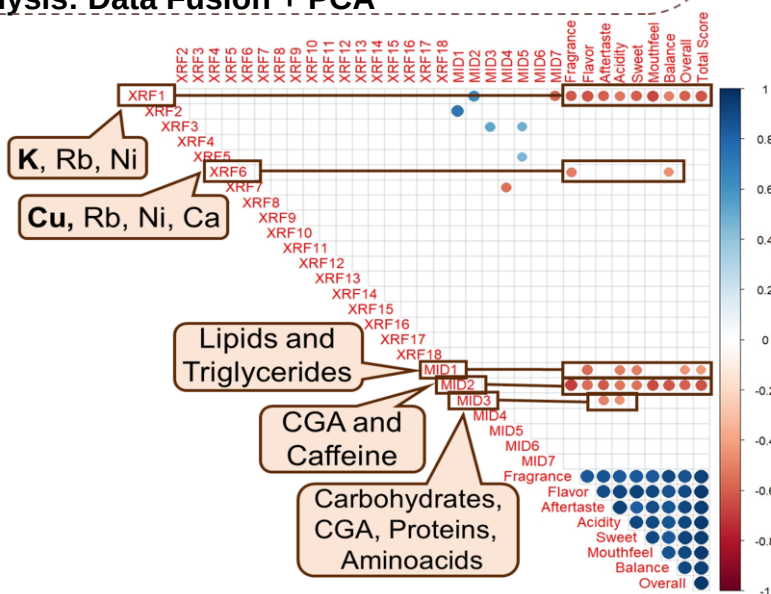


Figure 1: Pearson Correlation Coefficients: Coffees x Sensory attributes

Conclusion/Perspectives

This study highlights spectroscopic techniques to characterize *Coffea canephora* and link its composition to beverage quality, supporting integration of chemical and sensory data in quality control.

References:

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