CBCTA 2018
XXVI CONGRESSO BRASILEIRO DE CIÊNCIA E TECNOLOGIA DE ALIMENTOS
O USO CONSCIENTE DA BIODIVERSIDADE: PERSPECTIVAS PARA O AVANÇO DA CIÊNCIA E TECNOLOGIA DE ALIMENTOS
13 a 16 de Agosto de 2018
Belém . Pará . Hangar

CHEMICAL PROPERTIES FROM COFFEE PARCHMENT GENERATED BY MOIST AND DRY COFFEE PULPING

Caroline Corrêa de Souza Coelho[1, *], Sidney Pacheco[2], Ronoel Luiz de Oliveira Godoy[2], Otniel Freitas-Silva[2], Lourdes Maria Corrêa Cabral[2]

[1]PPGCAL/Instituto de Química, UFRJ, Cidade Universitária, Ilha do Fundão, CEP: 21949-900 Rio de Janeiro, RJ, Brazil
[2]Embrapa Agroindústria de Alimentos, Av. das Américas, 29501, 23.020-470, Rio de Janeiro, RJ, Brazil
*Corresponding author: carolcsc@hotmail.com

INTRODUCTION

In 2016–17, the global coffee production was about 159.6 million of 60 kg bags, while the consumption rounded the 157.8 million of 60 kg bags. However, during coffee processing a significant amount of waste is generated as co-product, named coffee parchment. In the dry processing (DP), the parchment is separated from the green coffee beans together with the peel and pulp, in a single step. However, in the wet processing (WP), the parchment is removed after drying and hulling in separate steps, producing a more pure coffee parchment, whereas in the parchment coffee from DP may contain husk and mucilage residues.

Studying the phenolic compounds of these residues as an essential step to find out potential uses for their further valorization. Chlorogenic acids (CGA) and related compounds are the main components of the phenolic fraction of coffee. The main groups of CGA found in coffee beans include caffeoylquinic acids, dicaffeoylquinic acids, feruloylquinic acids, p-coumaroylquinic acids and mixed diesters of caffeic and ferulic acids with quinic acid, each group with at least three isomers. Caffeine is also a compound with antioxidant properties found in coffee, which has a greater protective effect on the tissues.

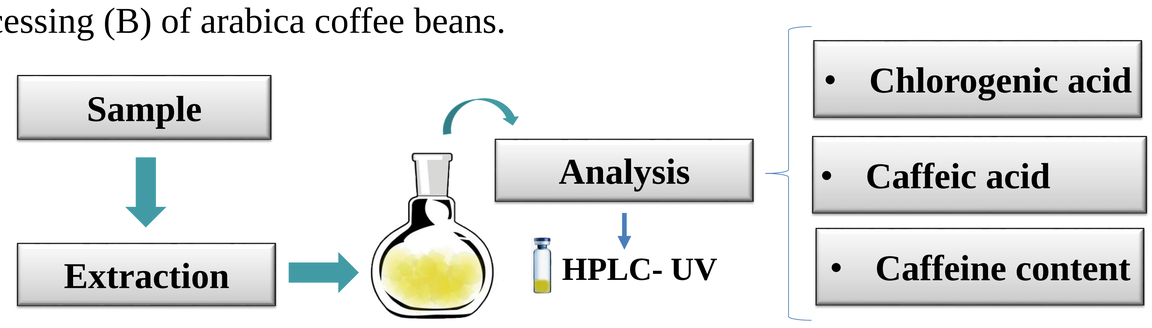
OBJECTIVE

The present study had as objective to study the chemical composition of two different types of residues generated by the dry processing method and wet processing method. Thus, this investigation evaluated the Chlorogenic and caffeic acids and caffeine contents.

MATERIAL AND METHODS

- **Sample** ➡ Residue obtained from the dry and wet coffee processing of the Arabica coffee beans variety Catuai (São José do Vale do Rio Preto, Rio de Janeiro).

Figure 1 - Agroindustrial residue obtained from dry processing (A) and wet processing (B) of arabica coffee beans.



The analytical method used was based on reverse phase column chromatographic separation (C18, Thermo BDS HYPERSIL, 150 mm x 4.6 mm e 2.4 µm) at 30 °C, in gradient elution mode of phosphoric acid 1.5 mL.L^{-1} in water and acetonitrile, with flow from 1.0 to 1.2 mL.min^{-1}, injection volume of 5µL and run time of 30 min. The analyses were performed in triplicates.

RESULTS AND DISCUSSION

- **Chlorogenic and caffeic acids**

Wet processing method and dry processing method have different Chlorogenic acids content ($p < 0.05$), revealed a 5.5- fold higher in residues obtained from wet processing method.

As well as, when comparing the caffeic acid contents, the residues obtained from wet processing method revealed a 2.4- fold higher when compared to residues obtained from dry processing method ($p < 0.05$).

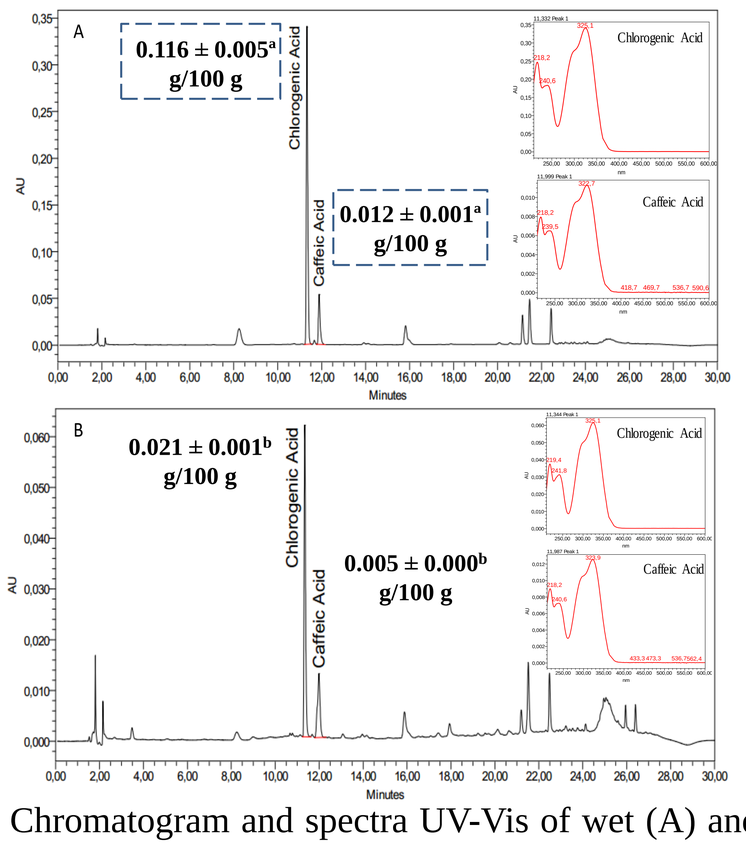


Figure 2- Chromatogram and spectra UV-Vis of wet (A) and dry (B) coffee processing residues, in 325 nm. Means with the different letter are significantly different ($p < 0.05$) using t- test.

- **Caffeine**

According to the results, the residues obtained from WP and DP technologies from Arabica coffees, have significate difference in Caffeine content ($p < 0.05$), revealed a 1.7- fold higher in residues obtained from DP.

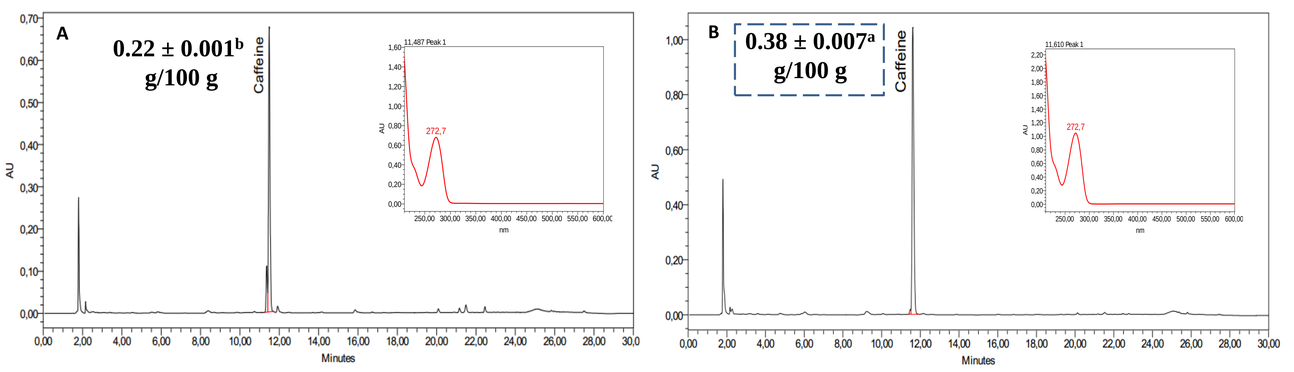


Figure 3- Chromatogram and spectra UV-Vis of the Caffeine, identified in the fraction of wet (A) and dry (B) coffee processing residues, in 272 nm. Means with the different letter are significantly different ($p < 0.05$) using t- test.

CONCLUSION

All parameters presented variation among in both coffee residues. By means of the obtained results, it can be demonstrated that the coffee residue obtained by different processing has different compositions. In this way a possible destination of their use can be valorized according each pattern.