

STUDY OF ANTIOXIDANT ACTIVITY, TOTAL PHENOLICS AND PROANTHOCYANIDINS LEVELS FROM INSTANT COFFEE AND FROM ITS ROASTING OIL

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Abstract

Instant coffee (IC), instant coffee (sprayed with coffee roasting oil - ICS) and roasting coffee oil (PO) were analyzed.

Introdução

Instant coffee is an alternative to coffee drinkers but are these options so good as the brewed ones? Three samples IC, ICS and PO were analyzed by spectrophotometric assays and their antioxidant activity using DPPH method, total phenolics using Folin-Ciocalteu method and proanthocyanidins levels by vanillin method, were evaluated. These assays can be used to compare among samples and to other samples of coffee. The main difference in composition of brewed coffee and instant coffee is on the higher amount of Robusta (aka conillon) grains in instant coffee and higher Arabica grains in brewed coffee. The Robusta grains are more suitable for instant coffee preparation because of its higher total dissolved solids.

Resultados e Discussão

The content of total phenolics determined by the Folin-Ciocalteu method presented 29.6 mg of GAE (gallic acid equivalents) per gram of IC, 25.8 mg for ICS and 2.4 mg for PO. The proanthocyanidin content obtained by vanillin method showed 15.1 mg of CE (catechin equivalents) per gram of IC, 14.6 mg for ICS and 9.0 mg for PO. The antioxidant capacity was determined by DPPH radical method and the results were considered moderate for IC (5.16 mg per mg of extract DPPH with EC₅₀ 99.6 µg.mL⁻¹), low for the instant coffee with ICS (7.06 mg of extract per mg of DPPH with EC₅₀ 133.8 µg.mL⁻¹) and inactive for PO (17.5 mg of extract per mg of DPPH with EC₅₀ 389.5 µg.mL⁻¹). There are a few studies regarding total phenols and antioxidant activity of instant coffees and the values obtained have large differences depending upon the analytical method used, as well as the difference upon the nature and composition of instant coffees. for conventional coffees, since these compounds are formed according to the severity of the roasting. A Infrared analysis of the coffee roasting oil confirmed the presence of some characteristic functional

groups of compounds present in conventional coffee oil.

Figura 1. Infrared spectra of coffee roasting oil.

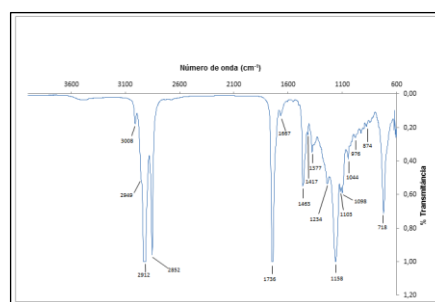


Tabela 1. Analysis of samples and literature

Samples (light and medium roast)	Antioxidant activity (EC 50)	Total phenolics (mg of GAE/gram)	Proanthocyanidins (mg of CE/gram)
IC	99.6	29	15.1
ICS	133.8	25.8	14.6
PO	389.5	2.4	9
Arabica*	23 to 29	64 to 98	3 to 6
Robusta*	15.3 to 22.8	148	2.8 to 5.7

*higher in composition

Conclusões

The values found for total phenolics and antioxidant activity can only confirm best values for beverages mainly composed of arabica beans when compared to instant coffee, which have more robusta grains in its composition, because of the higher amount of soluble solids in water. On the other hand, the content of proanthocyanidins found for instant coffee samples were similar to those found in the literature. Instant coffees remain a good option for antioxidant resources as well as total phenolics and especially for proanthocyanidins.

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