

AQUEOUS GREEN COFFEE EXTRACT COMPOSITION

Mariutti, L.R.B.¹, Salva, T.J.G.², Bragagnolo, N.¹

¹*Department of Food Science, Faculty of Food Engineering, University of Campinas, Campinas, Brazil;*

²*Coffee Center, Agronomic Institute of Campinas (IAC), Campinas, Brazil; e-mail address:*

lilianma@unicamp.br

Abstract:

Green coffee beans contain around 6 to 10% (dry weight) of polyphenolic compounds, being the chlorogenic acids the main components, especially 5-caffeoylquinic acid (5-CQA) [1]. Chlorogenic acids are a series of phenolic compounds formed between cinnamic acids (caffeic, coumaric and ferulic acids) and quinic acid. These bioactive compounds are one of the most consumed phenolic compounds in the human diet and are found in high amounts in coffee, fruits (apple, pineapple, strawberry) and medicinal herbs (chrysanthemum flower, artemisia and artichoke leaves, echinacea roots). These compounds are the main precursors of coffee flavor and color, exerting an important role on the quality of the coffee brew. Caffeine, a methylxanthine, is another bioactive compound present in coffee beans which contributes to their antioxidant capacity. In addition, the consumption of coffee has been related to several health benefits, including the decreased risk of development of some chronic degenerative diseases such as cardiovascular diseases, diabetes and inflammation, which has been attributed partially to the antioxidant properties of the bioactive compounds found in coffee. The aim of this study was to produce and characterize an aqueous green coffee extract to be further used as antioxidant in processed meat. Green coffee beans were harvested in June 2015 at Coffee Center, Fazenda Santa Elisa, Agronomic Institute of Campinas, Campinas, São Paulo. The beans were lyophilized and ground into powder. The extract was prepared by homogenizing 50 g of lyophilized green coffee with 500 mL ultrapure water, centrifugation and vacuum filtration. The supernatant was lyophilized constituting the aqueous green coffee extract. Total phenolic compounds were determined by the Folin Ciocalteu method [2]. Caffeine and 5-CQA were determined by HPLC-DAD-MS/MS [2,3]. The identification of these compounds was based on elution order on C₁₈ column and comparison of UV-Vis and MS spectra with those of authentic standards. The analyses were carried out in triplicate. Total phenolic compound content was 148.7 mg gallic acid equivalents/g lyophilized extract. Caffeine and 5-CQA contents were 25.9 mg/g lyophilized extract and 5.34 mg/g lyophilized extract, respectively. This extract will now be tested as a natural antioxidant in pork meat submitted to high pressure processing.

References:

- [1] Ludwig, I.A., Clifford, M.N., Lean, M.E., Ashihara, H. and Crozier, A. 2014. Coffee: Biochemistry and potential impact on health. *Food and Function*. 5: 1695-1717.
 - [2] Rodrigues N.P., Salva, T.J.G. and Bragagnolo, N. 2015. Influence of Coffee Genotype on Bioactive Compounds and the in Vitro Capacity To Scavenge Reactive Oxygen and Nitrogen Species. *J. Agric. Food Chem.* 63: 4815–4826.
 - [3] Tfouni, S.A., Carreiro, L.B., Teles, C.R.A., Furlani, R.P.Z., Cipolli, K.M.V.A.B. and Camargo, M.C.R. 2014. Caffeine and chlorogenic acids intake from coffee brew: Influence of roasting degree and brewing procedure. *Int. J. Food Sci. Tech.* 49: 747–752.
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