**Title:**

## Application of ultrasound-assisted extraction in coffee silverskin

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**Abstract:**

Coffee silverskin (CS) is a thin skin that cover the green coffee beans. This structure is partially removed during the process made on the raw material in coffee producer countries but a large amount of CS is produced by the coffee roasting process in consuming countries. This tegument is rich in phenolic compounds like chlorogenic acids characterized by an high antioxidant activity similar to that of wheat bran (Borrelli *et al.,* 2004). Moreover total phenolic content of CS is close to values found in pecan nut and walnut (Bresciani *et al.,* 2014). In the last years, in order to extract these compounds, different methods were used with different yields, complexity and costs.

The aim of this research was to evaluate the use of ultrasounds in order to optimize the extraction of chlorogenic acids by CS.

Optimal conditions for irradiation time and extraction temperature in the ultrasound-assisted extraction was determined using a Central Composite Design model. According to Ballesteros *et al.,* (2014) ethanol 60% v/v and a solvent ratio of 35 mL/g dry matter were fixed while extraction time was comprised between 15 and 45 min and the temperature between 30 and 80 °C. Using the Response Surface Methodology the optimal conditions of extraction for total phenolic content evaluated by Folin-Ciocalteu's method, DPPH radical scavenging capacity and phenolic acids content evaluated by HPLC-PDA were evaluated.

Obtained results allow to define the optimum conditions of extraction for obtain the maximum values of the three dipendent variables mentioned above.
Other researches are in progress in order to define the effect of CS dimension, solvent concentration and solvent ratio on extraction yields and antioxidant activity.

**References**
Borrelli *et al.*(2004), *J. Agric. Food Chem.*, 52: 1338-1343.
Bresciani *et al.*(2014), *Food Res. Int.*, 61: 196-201.
Ballesteros *et al.* (2014), *Food Bioprocess Tech.*, 7: 1322-1332.