

Chlorogenic Acids Profile of *Coffea arabica* by-Products (Cascara and Silverskin): A Comparison with Green and Roasted Beans [†]

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Coffee, one of the most traded commodities in the world, contains compounds with health-promoting properties [1,2]. The presence of chlorogenic acids (CGA) is not only responsible for its bitter and astringent taste, but also for its anti-inflammatory, anti-tumoral, and antioxidant effects [1,2]. However, coffee production generates huge quantities of by-products that have a negative impact on the environment if they are not treated [3].

Cascara and silverskin are the primary by-products of coffee cherries pulping and green coffee roasting, respectively [3]. In this work, the CGA profile of these two coffee by-products were studied and compared with those of coffee beans (green and roasted), aiming a possible valorization in a circular economy context.

The samples were all of *Coffea arabica* from Colombia. A solid-liquid extraction with 40 ml of ethanol: water (1:1) was performed for 30 min, using 0.4 g (roasted and green coffee) or 1.2 g (silverskin and cascara) of sample. The caffeoylquinic acids (CQA) and feruloylquinic acids (FQA) were analyzed by RP-HPLC-DAD [4].

The results show that these coffee by-products have a significantly lower CGA content than green or roasted beans. In all samples, the predominant CGA was the 5-CQA. Cascara contained the highest concentration of 5-CQA among the by-products (1.1 mg/g dw), while green beans presented the highest amount (49.57 mg/g dw). In fact, roasted beans and silverskin are roasted at high temperatures, rendering CQAs susceptible to degradation, transesterification, isomerization, and conversion into lactones [5]. FQA are present in smaller amounts, with the highest concentration found in green beans (6.78 mg/g dw).

To conclude, while cascara and silverskin contain less CGA than coffee beans, they can still be considered a source of these high-value compounds. CGA in by-products could be recovered and used to improve the functionality of foods as well as in the pharmaceutical industry.

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