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## Introduction

The roasting of coffee, the world's second most popular beverage, generates significant by-products such as husks, so utilizing these by-products can reduce environmental impact. In this study, the fatty acid (FA) and amino acid (AA) composition in by-products (BP) as well as in raw (BR), light roasted (LR) and dark roasted (DR) coffee was analyzed.

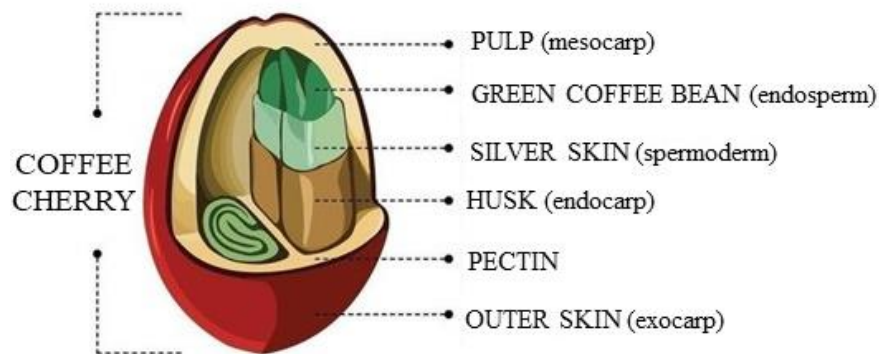


Figure 1. Anatomy of a coffee cherry

## Experimental

Fatty acid methyl esters were prepared by transesterification with potassium hydroxide and analyzed by gas chromatography (GC) on a Varian 3900 with a flame ionization detector (FID) according to the method described in Soldo *et al.* (2023)<sup>1</sup>.

Amino acids were separated by high performance liquid chromatography (HPLC) on a Perkin Elmer Series 200 system with a fluorescence detector using an AccQ Tag column. Amino acid hydrolyzate standard as described in the AccQ<sup>TM</sup>Tag protocol<sup>2</sup> (Waters) was used for amino acid identification and quantification.

## References:

<sup>1</sup> Soldo *et al.* (2019) Eur. J. Lipid Sci. Technol., 1800513

<sup>2</sup> Waters AccQ<sup>TM</sup>Tag Chemistry Package, Instruction Manual, 2009.

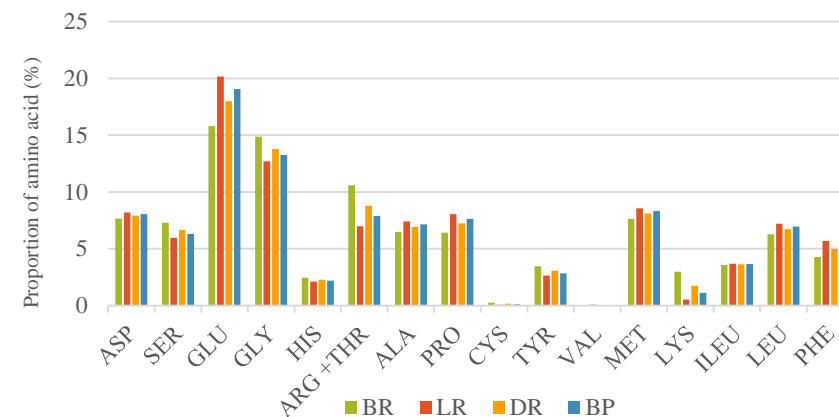


Figure 2. Amino acid profile

## Discussion and Conclusion

The dominant fatty acids in these samples were C18:2, C16:0, C18:1 and C18:0. Unsaturated fatty acids (USFA), especially C18:2 and C18:1, accounted for 52.11-53.95% of the total fatty acids in DR and LR coffee and about 35% in BP. BR coffee consisted mainly of saturated fatty acids, with C16:0 being the most abundant at 66.84%. In addition, fatty acids such as C20:0, C21:1, C20:4 and C22:0 were mainly present in BP, which had a high C22:0 content of 17.01%. The analysis of amino acids showed slight differences between BR and roasted coffee and BP. Glutamine and glycine were the most abundant. BR coffee had a slightly higher content of arginine (10.59%), threonine and lysine (2.98%). Although the amino acid profiles were similar, the concentration in BP was 2.5 to 3 times lower. Coffee BPs are an inexpensive source of fats and amino acids and offer potential as functional food ingredients

This research is supported by the PRIMA program under project AgriBioPack. The PRIMA program is supported by the European Union.

