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Fatty Acids and Tocopherols Profile of Regular and Decaffeinated Instant Coffees

Helen Stephanie Ofei Darko[1], Benedetta Fanesi[1], Benedetta Albanesi[1], Lama Ismaiel[1], Deborah Pacetti[1], Oscar Núñez[2], Paolo Lucci[1]

[1]Department of Agricultural, Food and Environmental Sciences, Università Politecnica delle Marche, Ancona, Italy

[2]Department of Chemical Engineering and Analytical Chemistry, University of Barcelona, Martí i Franquès 1-11, E-08028 Barcelona, Spain

INTRODUCTION & AIM

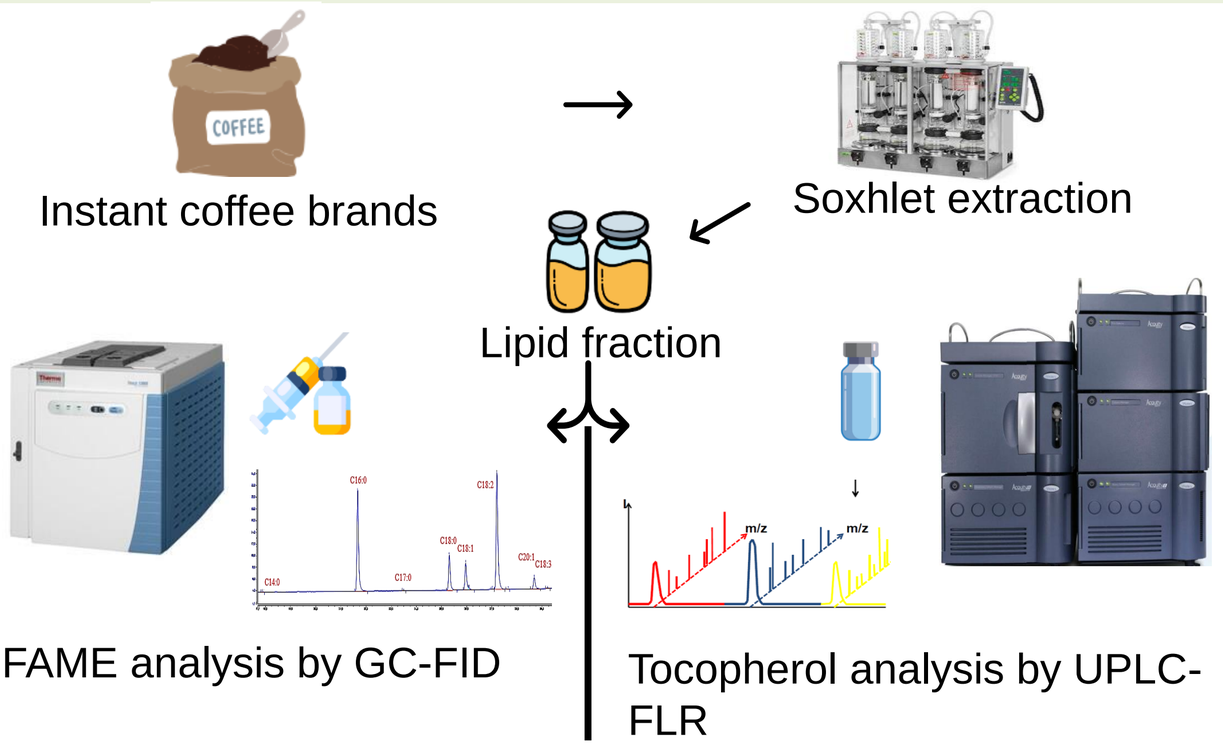
Coffee is the most consumed beverage in the world, and in the form of instant coffee, it is highly appreciated for its ease of preparation.

However, its frequent consumption may cause side effects like hypertension and arrhythmias due to the presence of caffeine.

For this reason, decaffeinated coffee has become more popular. The decaffeination process may affect both the chemical and nutritional profile.

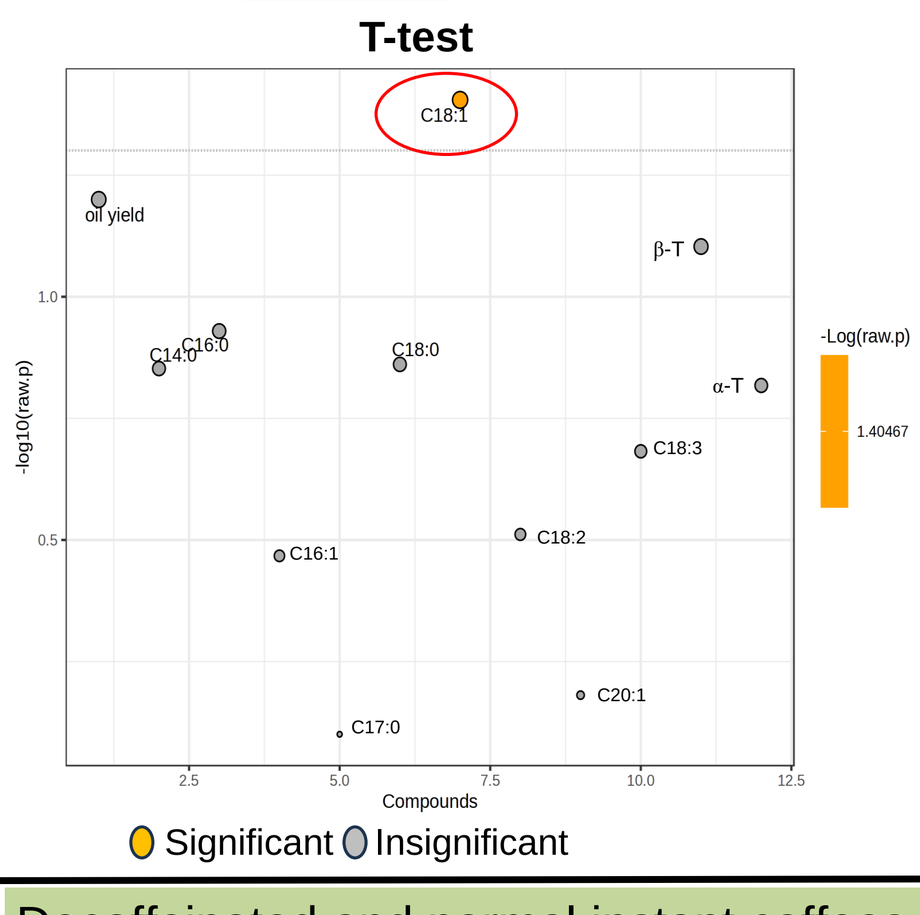
This study aimed to evaluate chemical and nutritional aspects and investigate the presence of descriptors for authentication issues.

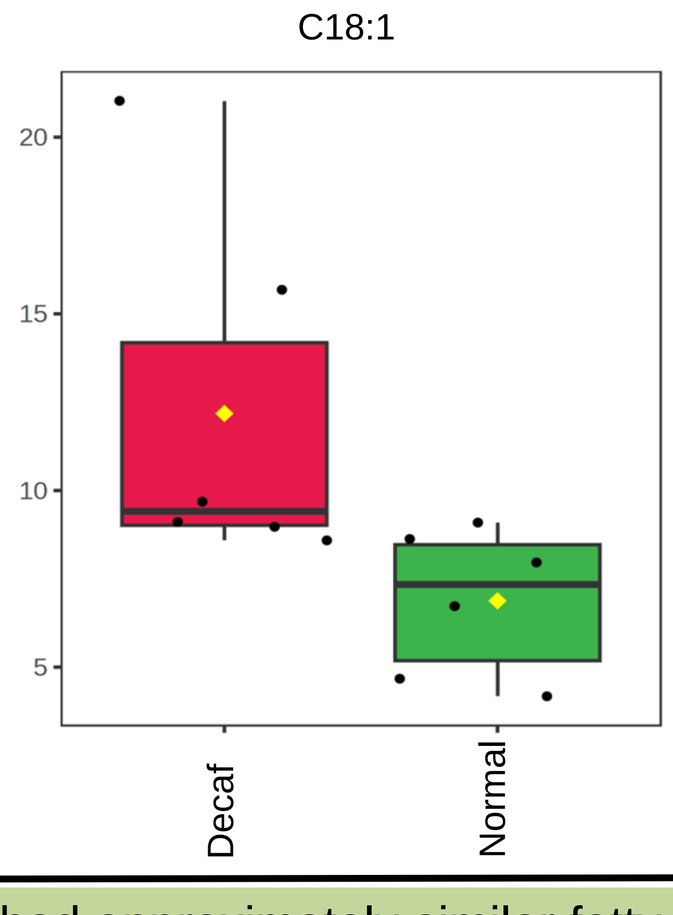
METHOD

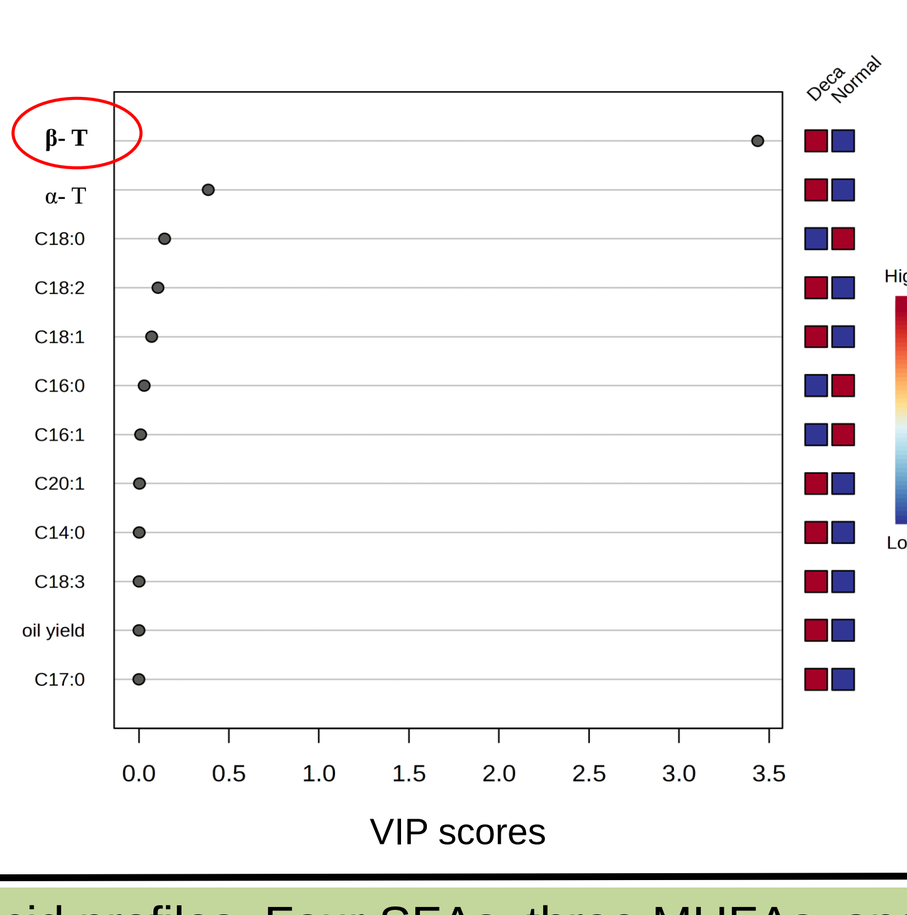


Analytical method for fatty acids and tocopherols

RESULTS & DISCUSSION







Decaffeinated and normal instant coffees had approximately similar fatty acid profiles. Four SFAs, three MUFAs, and two PUFAs were identified with **C16:0**, **C18:2**, **C18:0**, and **C18:1** being the most abundant.

α and β tocopherols were identified, with a total concentration ranging from **78 to 789 mg/kg** in **decaffeinated coffee** and **63 to 428 mg/kg** in **normal instant coffee,** and β tocopherol had the highest VIP score of **3.5**.

While the t-test showed that C18:1 was statistically different ($p < 0.05$) between the normal and instant coffees, no statistical difference was observed for β tocopherol in both coffee types.

CONCLUSION

The decaffeination process had minimal impact on the chemical and nutritional composition of instant coffees. Both decaffeinated and normal instant coffees showed similar fatty acid and tocopherol profiles. While C18:1 showed a significant difference, its abundance across various food matrices limits its use as a distinct marker. Further studies are needed to find more reliable indicators for coffee differentiation/authentication.

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