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Cytoprotective and anti-inflammatory properties of the bioaccessible fractions of encapsulated HPP-treated mango peel extracts

Diego Miedes¹, Mussa Makran¹, Elena Rodríguez-Rodríguez², Begoña Olmedilla-Alonso³, Concepción Sánchez-Moreno⁴, Begoña de Ancos⁴, Antonio Cilla¹ ¹Nutrition and Food Science Area, Faculty of Pharmacy and Food Sciences, University of Valencia, Valencia, Spain. ²Department of Chemistry in Pharmaceutical Sciences, Analytical Chemistry. Faculty of Pharmacy. Complutense University of Madrid. VALORNUT Research Group (920030-UCM), Madrid.

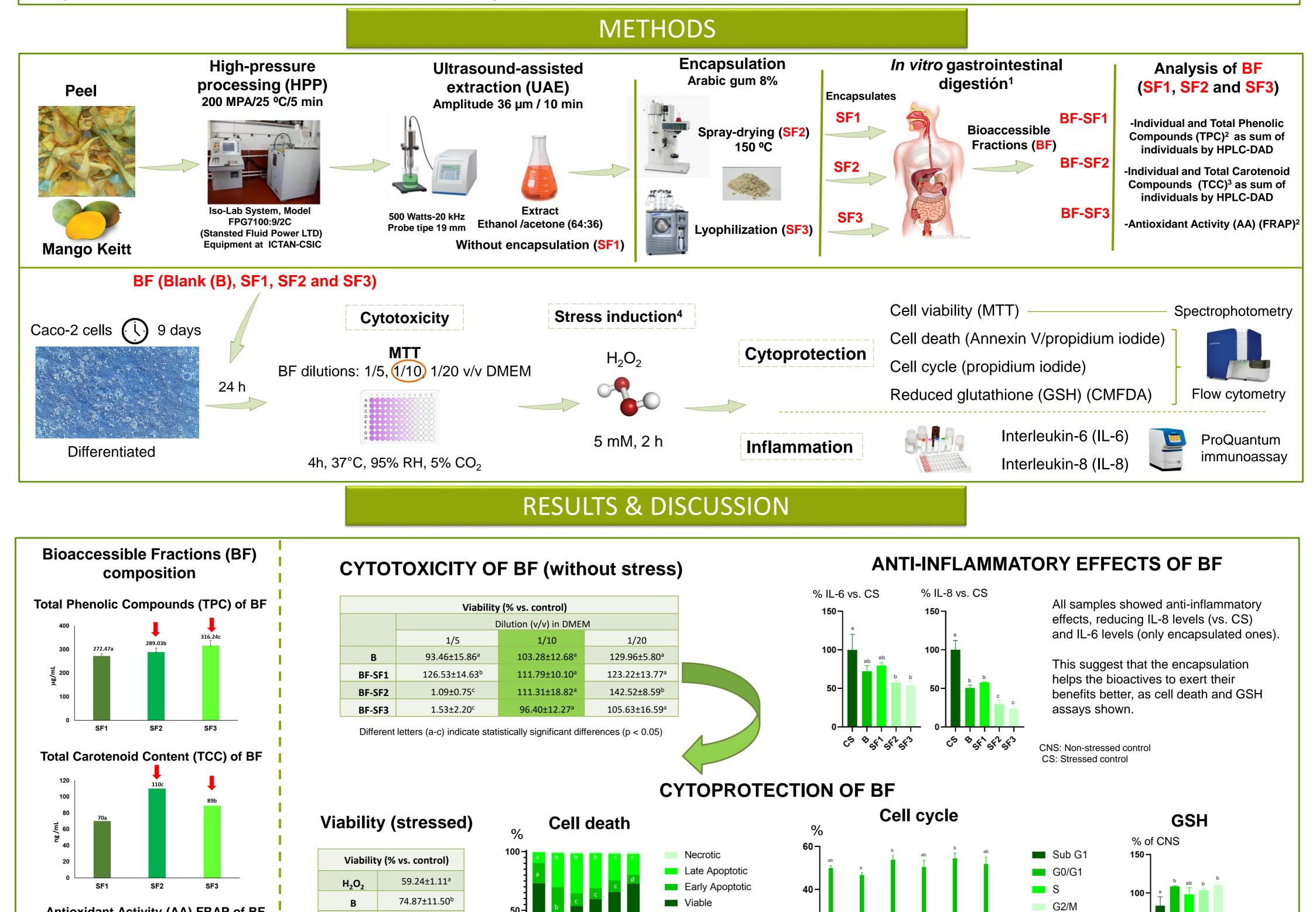
³Department of Metabolism and Nutrition, Institute of Food Science, Technology and Nutrition (ICTAN-CSIC), Madrid, Spain.

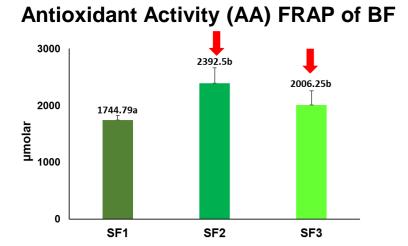
⁴Department of Characterization, Quality and Safety, Institute of Food Science, Technology and Nutrition (ICTAN-CSIC), Madrid, Spain.

INTRODUCTION & AIM

Fruit by-products are source of bioactive compounds (carotenoid and phenolic compounds) with antioxidant and anti-inflammatory properties. Ultrasoundassisted extraction (UAE), high-pressure processing (HPP) and encapsulation are sustainable technologies for their extraction and protection. The aim of this study was to evaluate the total carotenoid compounds (TCC), total phenolic compounds (TPC) and antioxidant capacity before and after in vitro digestion, and the cytoprotective and anti-inflammatory effects of the bioaccessible fractions (BF) of mango peel extracts. Additionally, to assess the effect of the

encapsulation of the extracts on the outcome of these assays.





spray-drying (SF2) and by lyophilization

(SF3) presented greater TPC, TCC and AA

(FRAP) than the non-encapsulated extract

extracts encapsulated by

The BF of

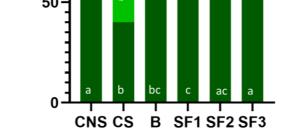
(SF1).

1	BF-SF1	104.38±7.40°
1	BF-SF2	115.38±12.79°
	BF-SF3	97.08±19.53°

Dilution 1/10 (v/v) is selected (no damage).

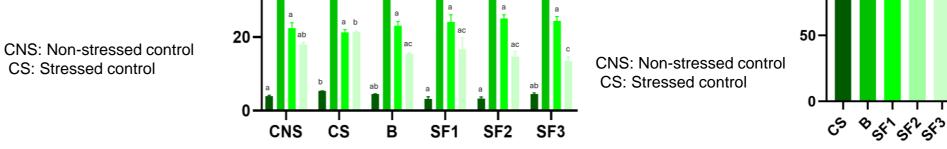
Hydrogen peroxide produced a 41% viability decrease.

All samples recovered control values (higher than the blank).



Oxidative stress decreased viability (analogous to the MTT assay), while increased both early and late apoptosis.

The extracts were able to reduce the apoptotic population and BF of SF3 even restore basal viable population.



Sub G1 population was increased with H_2O_2

Basal CNS values were obtained with all samples, although the blank and SF3 were also statistically equal to the CS.

G0/G1 pase was reduced only after CS treatment.

17% reduction of GSH levels after stress induction. All samples recovered basal levels.

Encapsulated samples (SF2 & SF3) showed a stronger positive effect than the non-encapsulated (SF1).

CONCLUSION

CS: Stressed control

Greater TCC, TPC, AA and cytoprotective and anti-inflammatory effects were observed in encapsulated samples (SF2 and SF3) compared to the nonencapsulated one (SF1), although no differences were observed between spray-drying and lyophilization. Thus, both encapsulation techniques are equaly effective and may enhance the bioactivity of mango peels.

¹Brodkorb et al. Nat Protoc, 2019, 14, 991–1014 (INFOGEST); ²Fernández-Jalao et al. J Food Eng, 2019, 213, 60-68; ³Estévez-Santiago et al. Food REFERENCES Funct, 2016, 7, 1354; ⁴Gómez et al. Food Res Int., 2019, 120, 52-61. Grant PID2019-107980RB-100 funded by ACKNOWLEDGEMENTS https://sciforum.net/event/Foods2024 MINISTERIO DE CIENCIA E INNOVACIÓN MCIN/AEI/10.13039/501100011033