IV CONGRESO IBEROAMERICANO
DE INGENIERÍA DE LOS ALIMENTOS

USING HIGH-INTENSITY ULTRASOUND TO IMPROVE PHYTOSTEROLS OLEOGELS PHYSICAL PROPERTIES AND STABILITY

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Organiza:

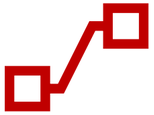
AGENDA

INTRODUCTION

OBJECTIVE

MATERIAL & METHODS

RESULTS & DISCUSSION

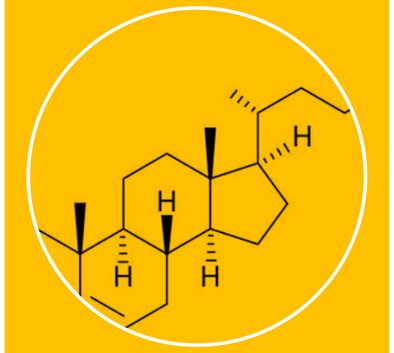


CONCLUSION

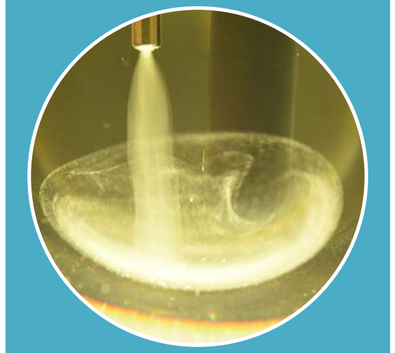
INTRODUCTION

Healthy aspects

Oleogel

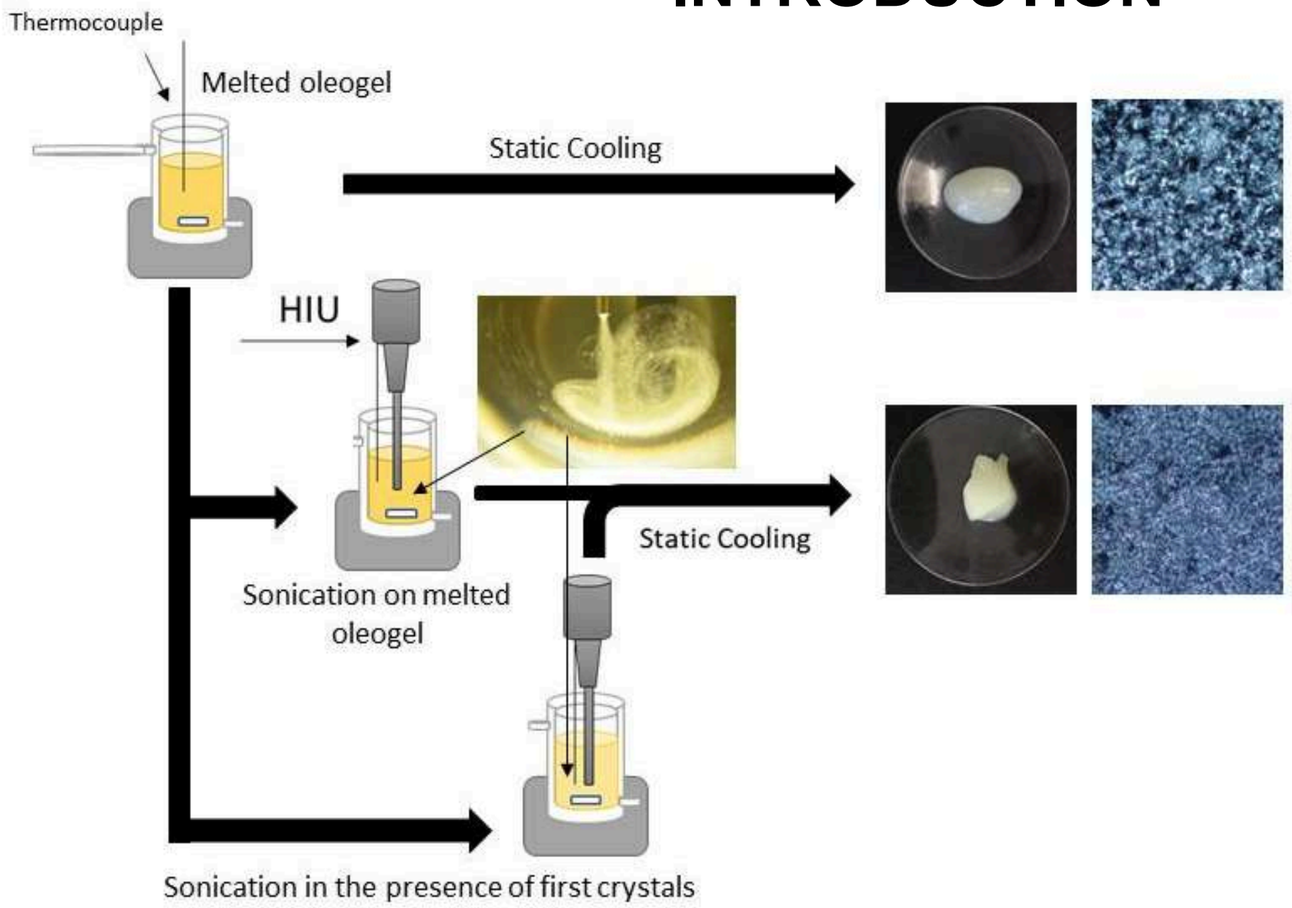


Phytosterols



High-Intensity Ultrasound

INTRODUCTION



↑ SOLUBILITY
↑ OIL BINDING CAPACITY
↓ PHASE SEPARATION
↑ HARDNESS
↑ VISCOELASTICITY
↓ INCOMPATIBILITY
↓ [OLEOGELATOR]

JANA AND MARTINI (2014); DA SILVA AND DANTHINE (2020,2022); GIACOMOZZI ET AL. (2020)

OBJECTIVE

The objective of this study was to evaluate the effect of high-intensity ultrasound (HIU) in the phytosterols oleogels physical properties, in order to try to produce a stable, smooth and self-sustainable oleogels using only phytosterols as structuring agent.

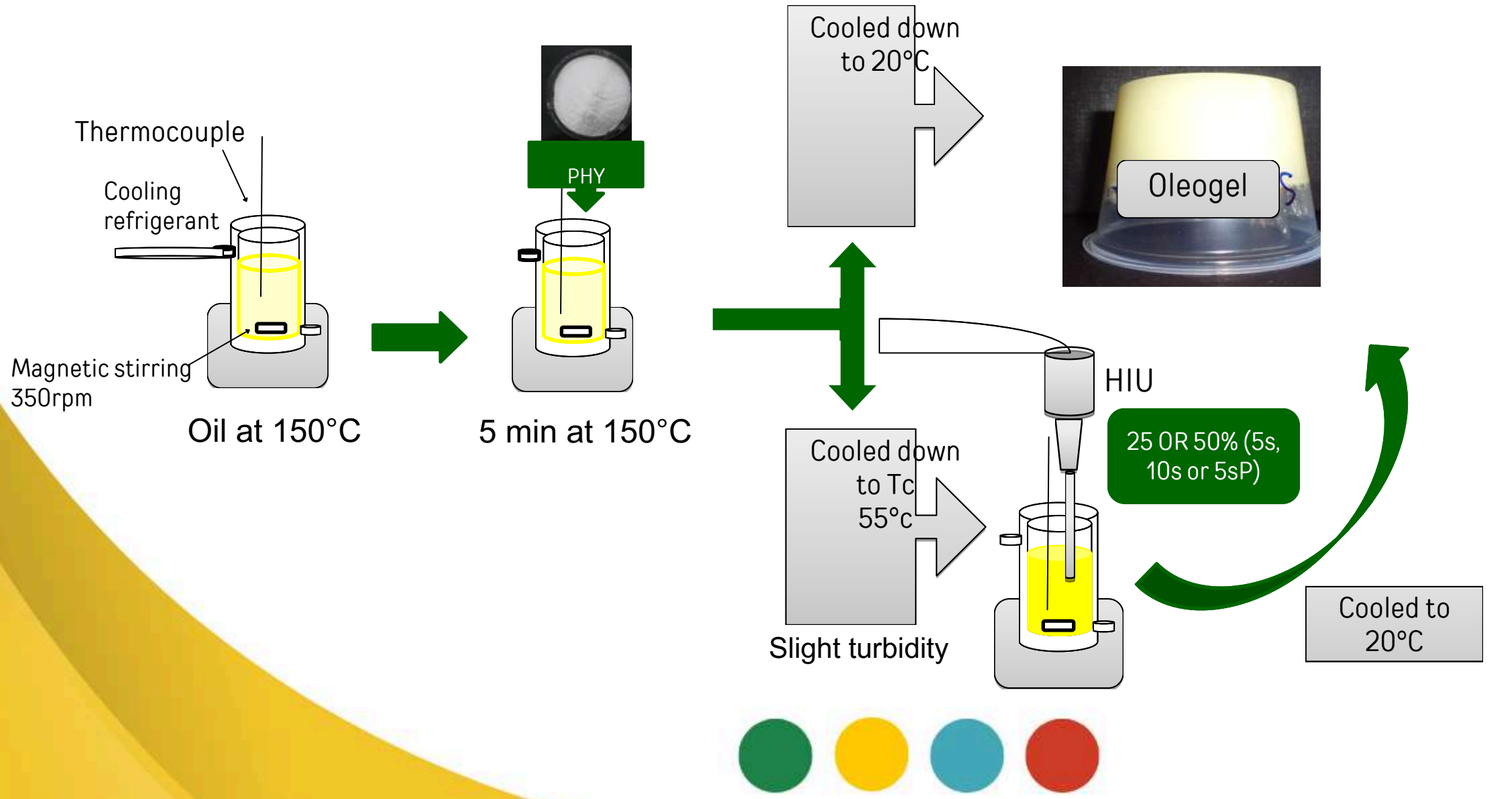
MATERIAL AND METHODS

MATERIAL:
RAPESEED OIL
PHYTOSTEROIS CardioAid™

METHODS:

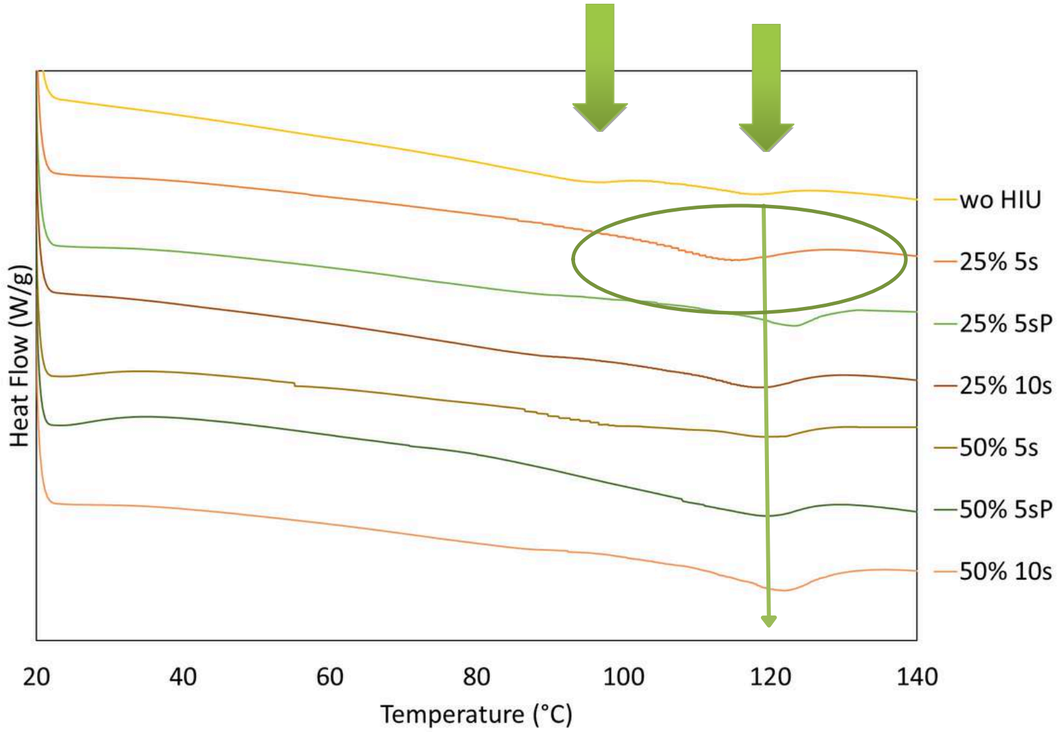
MICROSTRUCTURE
OBC
RHEOLOGY
HARDNESS
MELTING BEHAVIOR
X-RAY

SAMPLE PREPARATION:

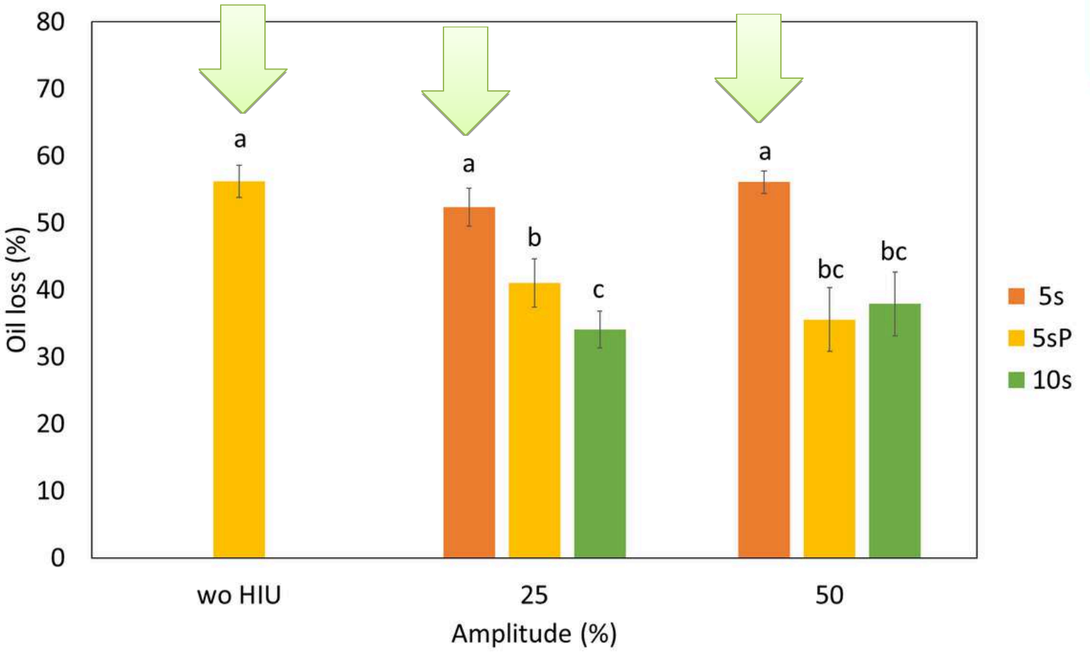


RESULTS AND DISCUSSION

MELTING BEHAVIOR

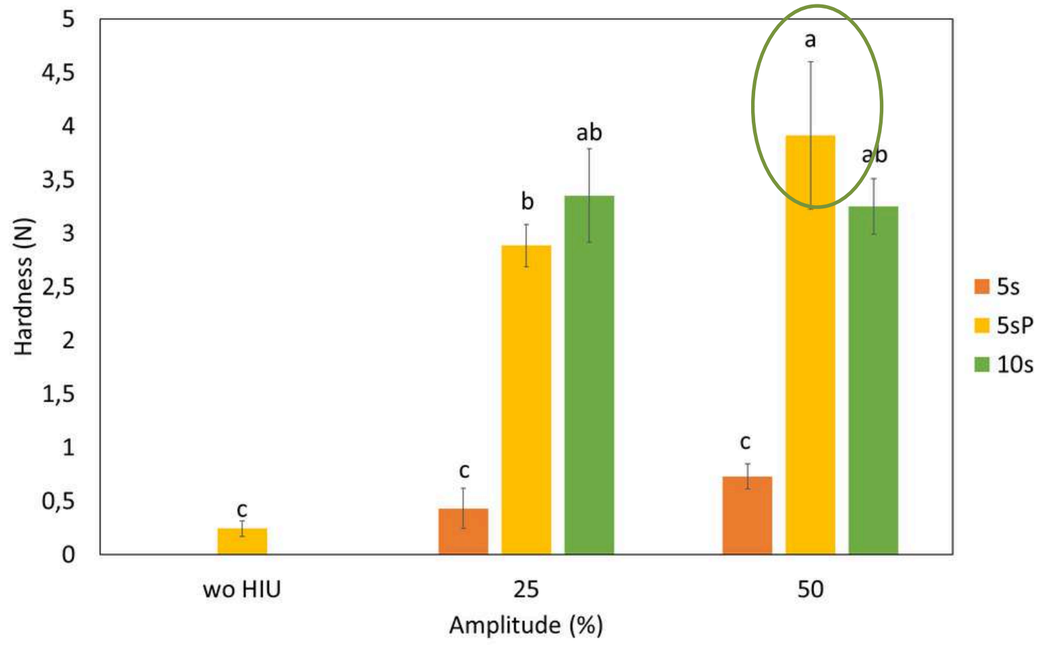


OIL LOSS



RESULTS AND DISCUSSION

TEXTURE:



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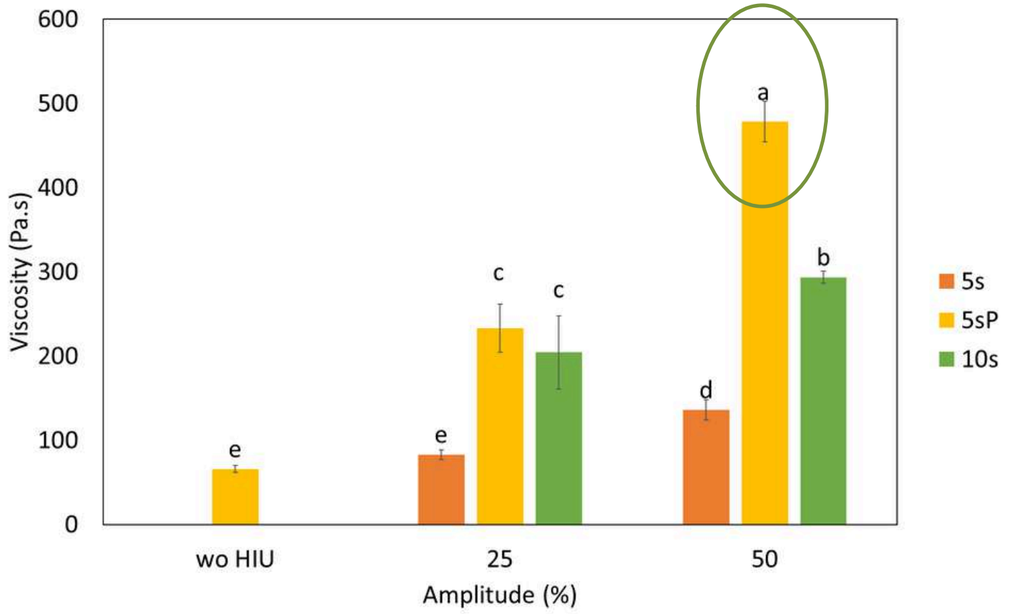
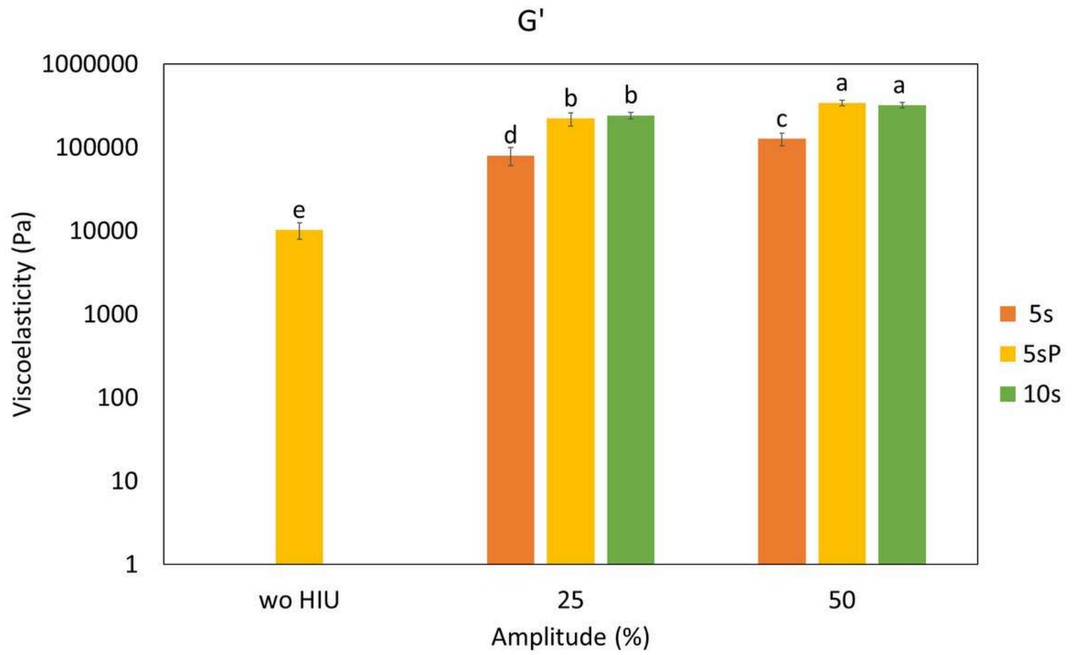
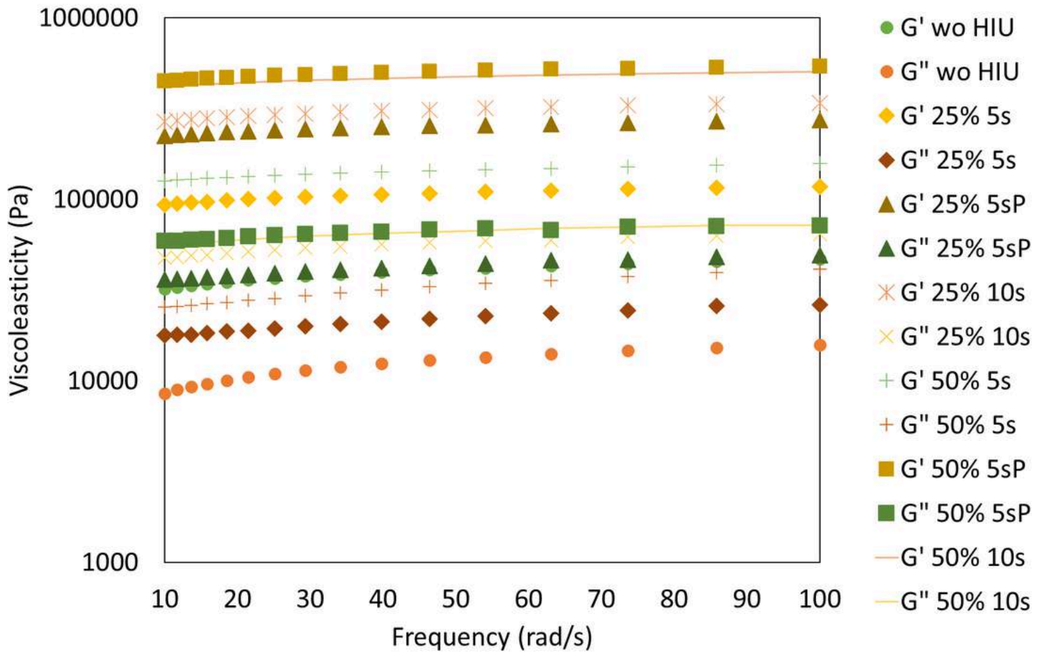


RESULTS AND DISCUSSION

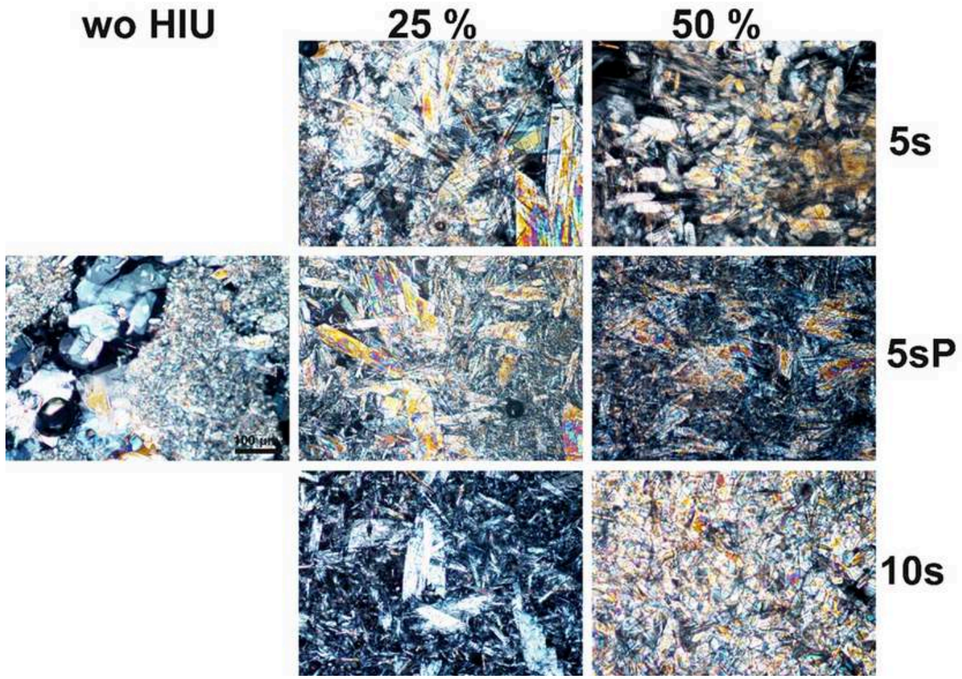
RHEOLOGY:



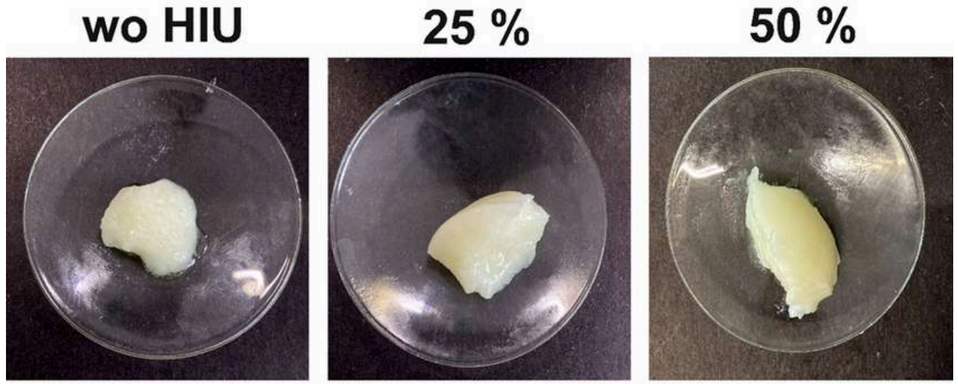


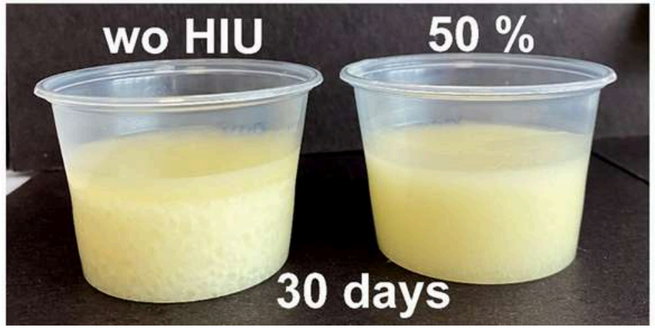
RESULTS AND DISCUSSION

MICROSTRUCTURE



APPERANCE





CONCLUSIONS

- We can conclude that HIU significantly improved phytosterols' oleogelations properties and consequently their physical properties by improving phytosterols' stability and solubility.
- To be able to cause some change cavitation HIU must be applied for at least 10s, continuous on a lower amplitude (25%) or in pulses in a higher amplitude (50%).
- 50% 5sP is the best condition found among all tested.
- Moreover, a further investigation regarding the stability of phytosterols on oils after sonication to prevent agglomeration and phase separation over time is a further result that is worth supplementary investigation.

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THANK YOU

QUESTIONS?

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