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O USO CONSCIENTE DA BIODIVERSIDADE:
PERSPECTIVAS PARA O AVANÇO DA CIÊNCIA E
TECNOLOGIA DE ALIMENTOS

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Belém . Pará . Hangar

Production of Films Based on Chitosan and Turmeric Residue from Supercritical Extraction: Application as coating of *Arracacia Xanthorrhiza*

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Outline

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1. Context
2. Objectives
3. Experiment
4. Results
5. Conclusions

1. Context

Importance of bioactive edible films for ecosystem

- The residue comes from a low degradation



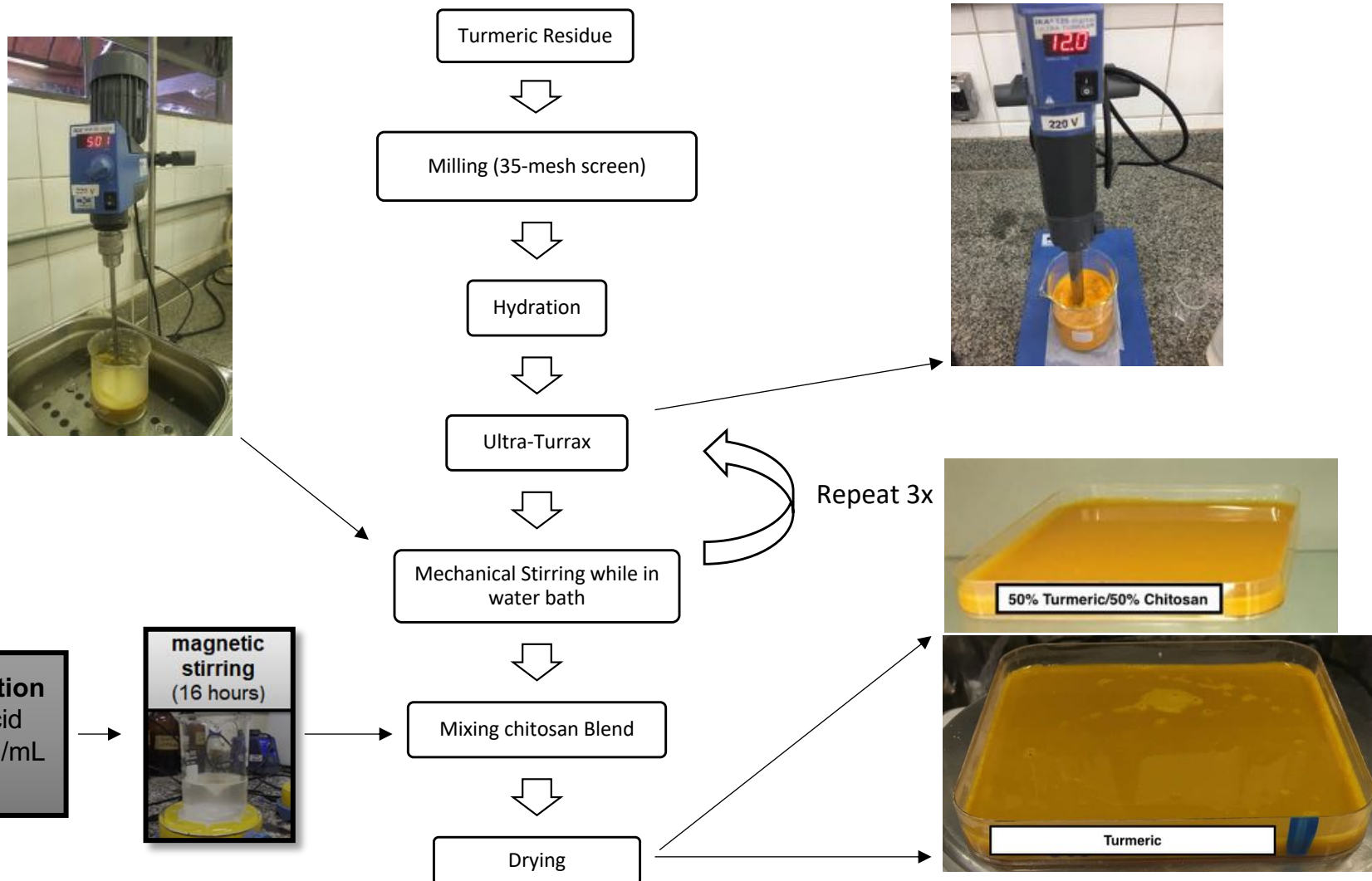
2. Objectives

The present study evaluates blending of chitosan and turmeric (*Curcuma longa* L.) pseudo-residues from SFE to produce edible films and apply this film suspension as coating arracacha (*Arracacia xanthorrhiza*) in order to expand its shelf life.



Arracacia xanthorrhiza

3. Experiment



3. Experiment

- Films

Tensile Strength (Mpa)



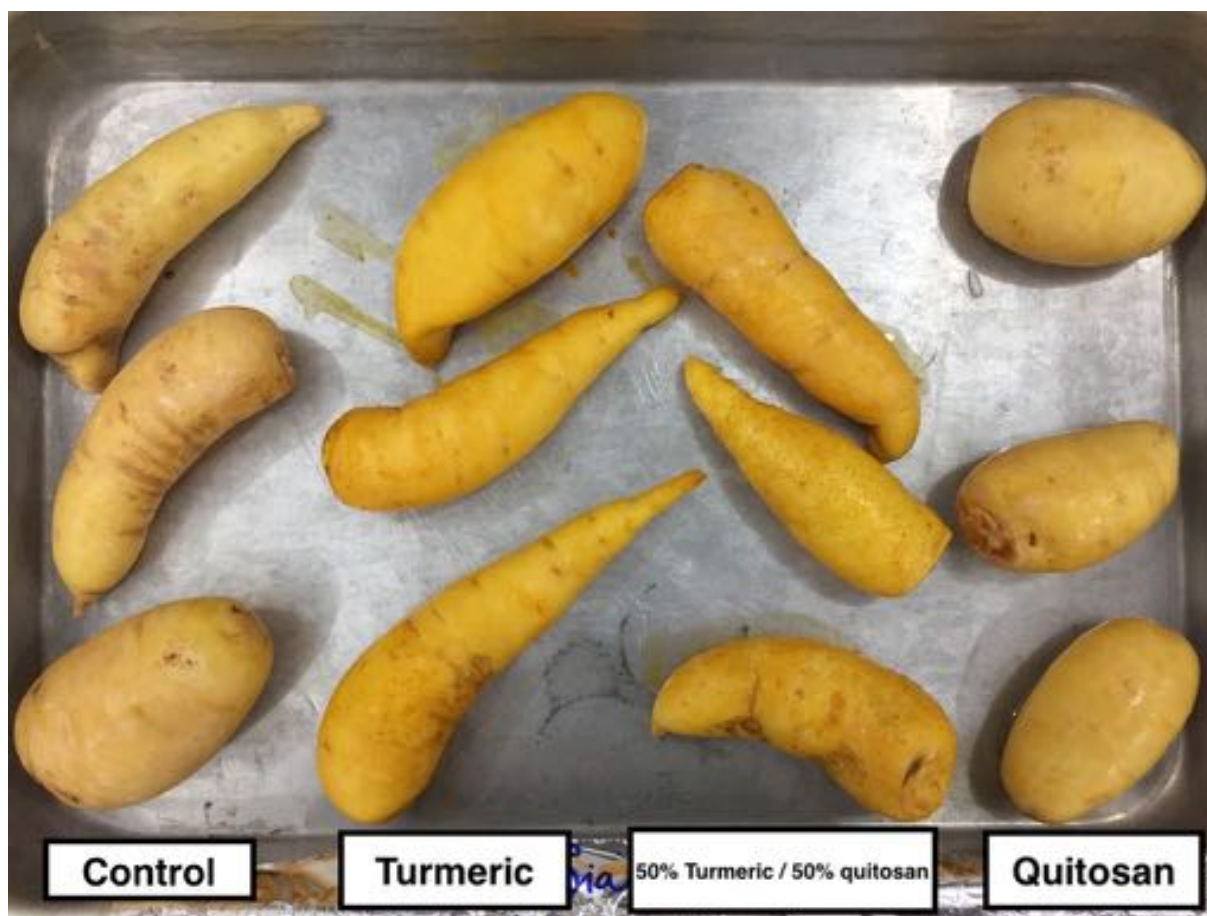
TA.XT Plus Texture Analyzer (Stable Micro System, Surrey, UK)

Day 1

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Arracacha coated with film suspension



Test

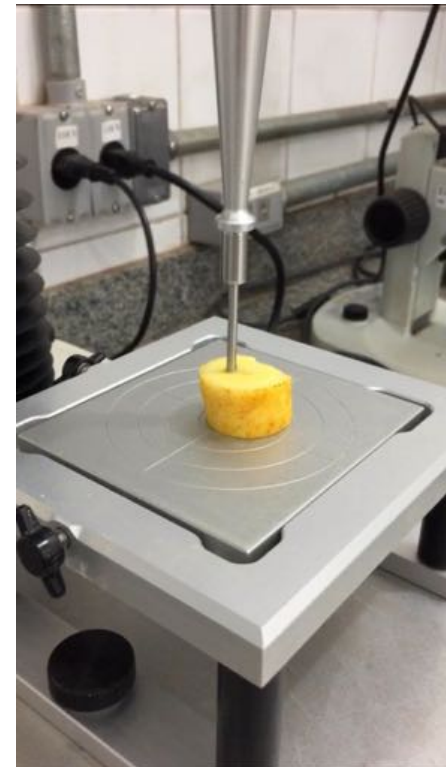
- Arracacha
pH-meter, Color test and firmness (peak force, N)



Portable colorimeter (MiniScan EZ 4500L, HunterLab, USA)



pH-meter (pH 3210, WTW, Germany)



TA.XT Plus Texture Analyzer (Stable Micro System, Surrey, UK)

3. Results

- Dried films

(A)

Tumeric

(B)

50% Tumeric / 50% Chitosan

Chitosan

Mechanical Properties

Table 1 - Mechanical Properties of blends (Turmeric/chitosan) and chitosan films.

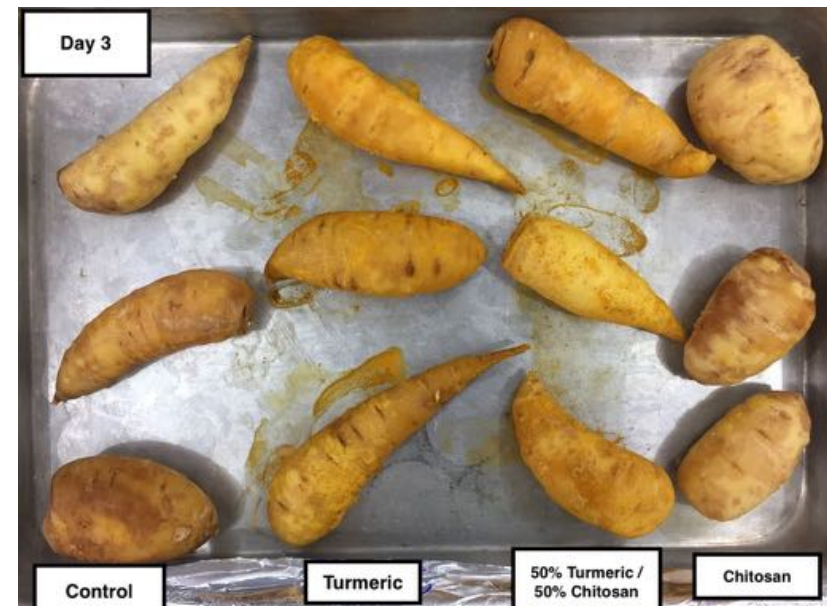
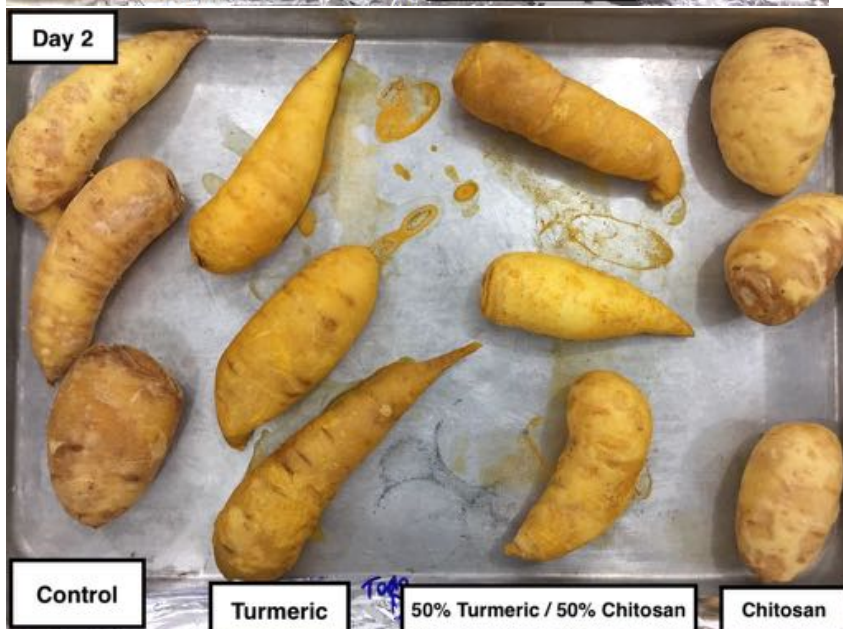
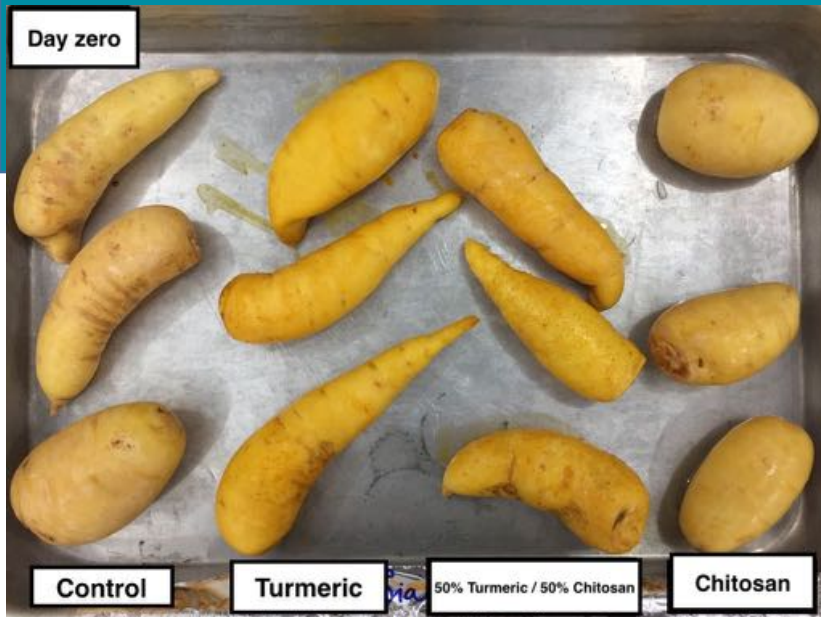
Films	Thickness (mm)	Tensile Strength, σ max (MPa)	Elongation, ϵ max (%)
Turmeric	*	*	*
Turmeric/chitosan	0.22 ± 0.08	6 ± 2^a	2.4 ± 0.5^a
Chitosan	0.024 ± 0.002	28 ± 9^b	2.1 ± 0.9^a

* Film couldn't be formed.

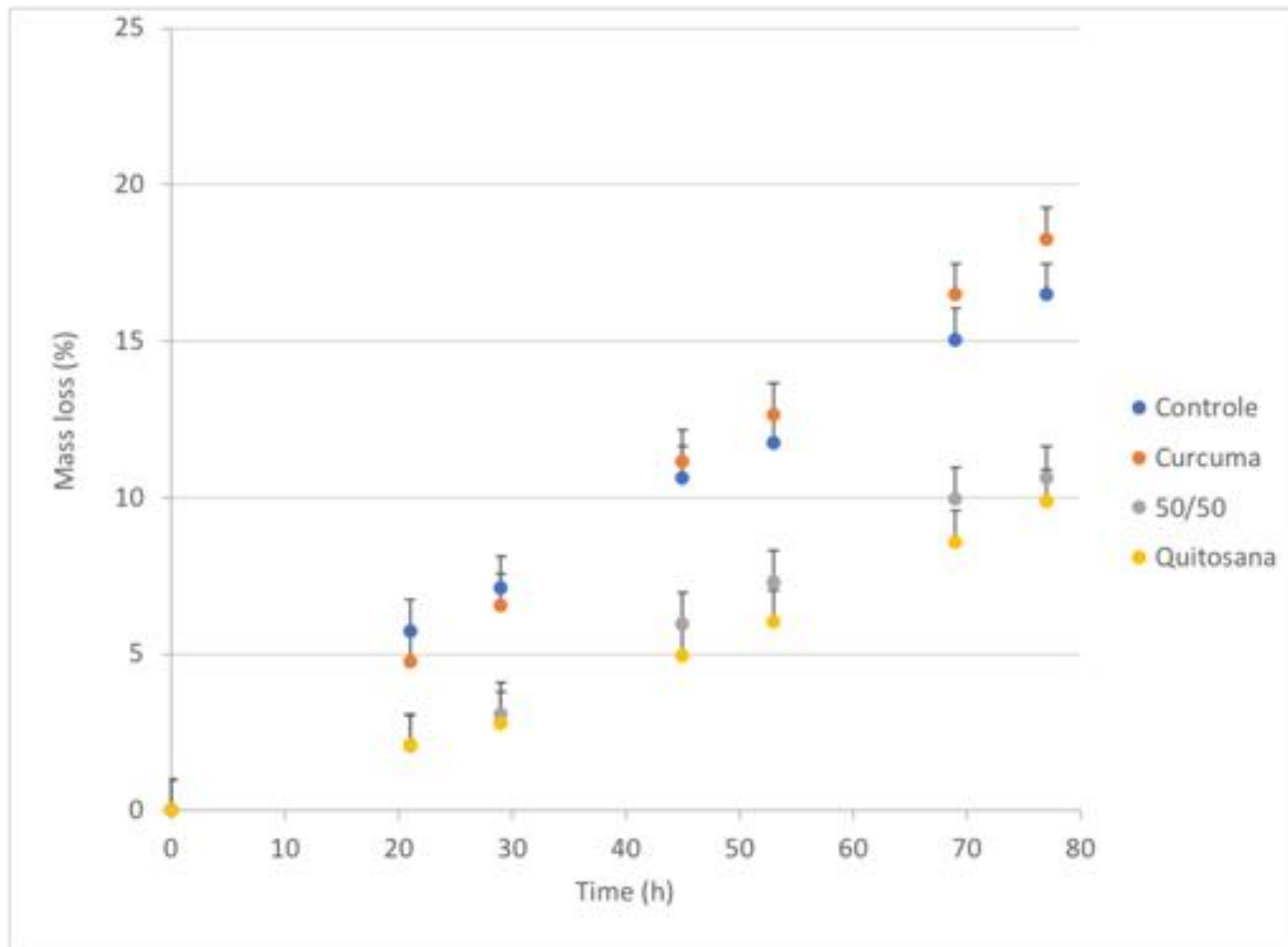
^{a-b} Means with different superscript letters in the same column are statistically different at $p < 0.05$ according to the Tukey's test.

Arracacha Evolution

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Mass Loss

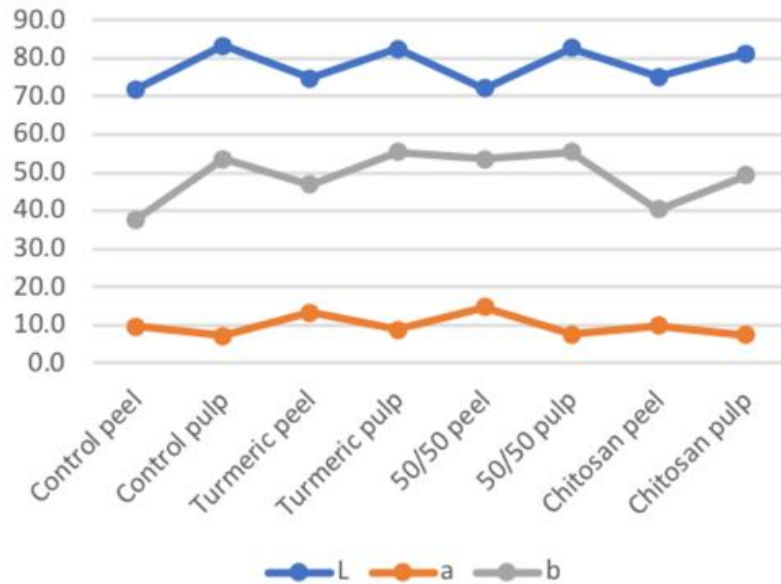


Color Test

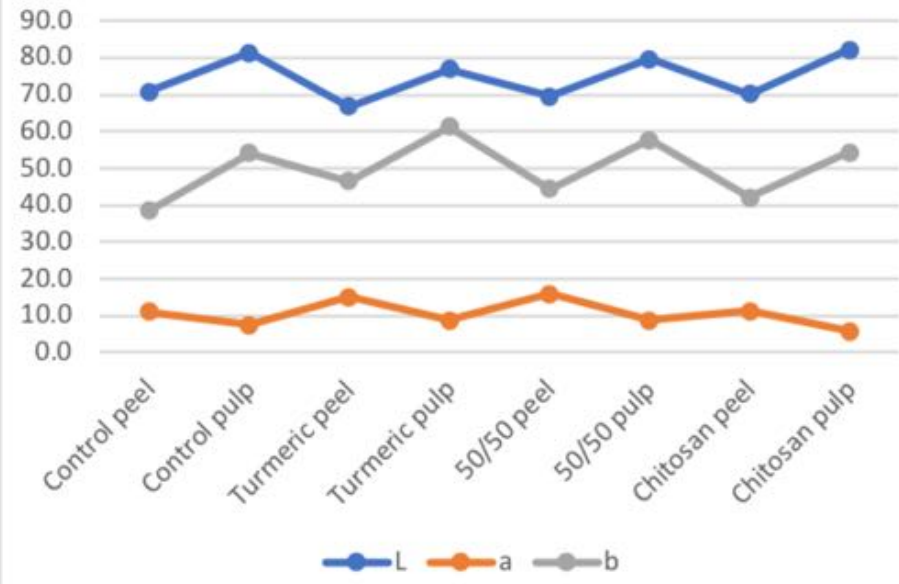
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Day 0

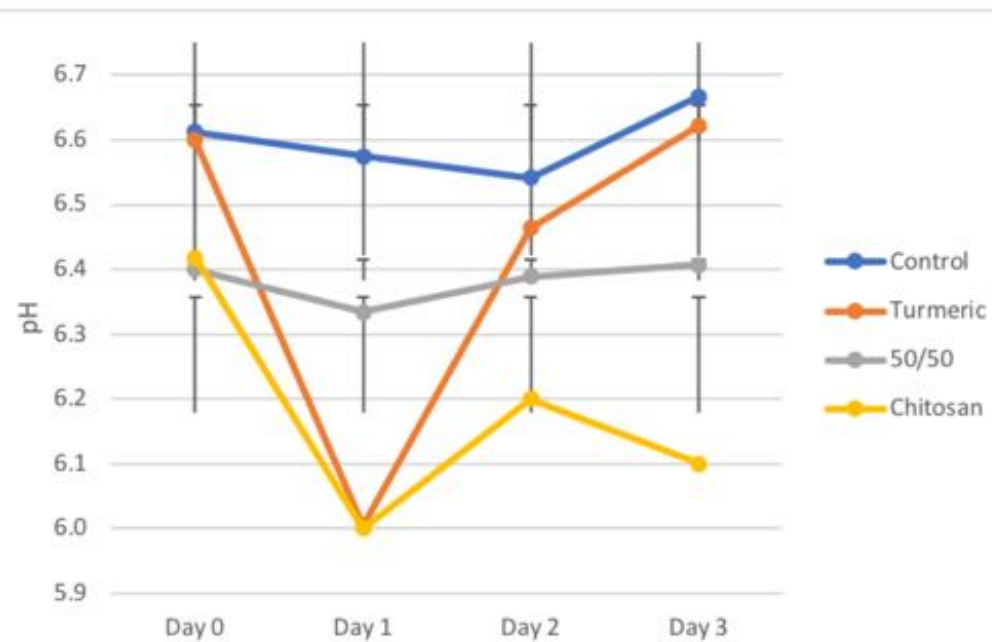
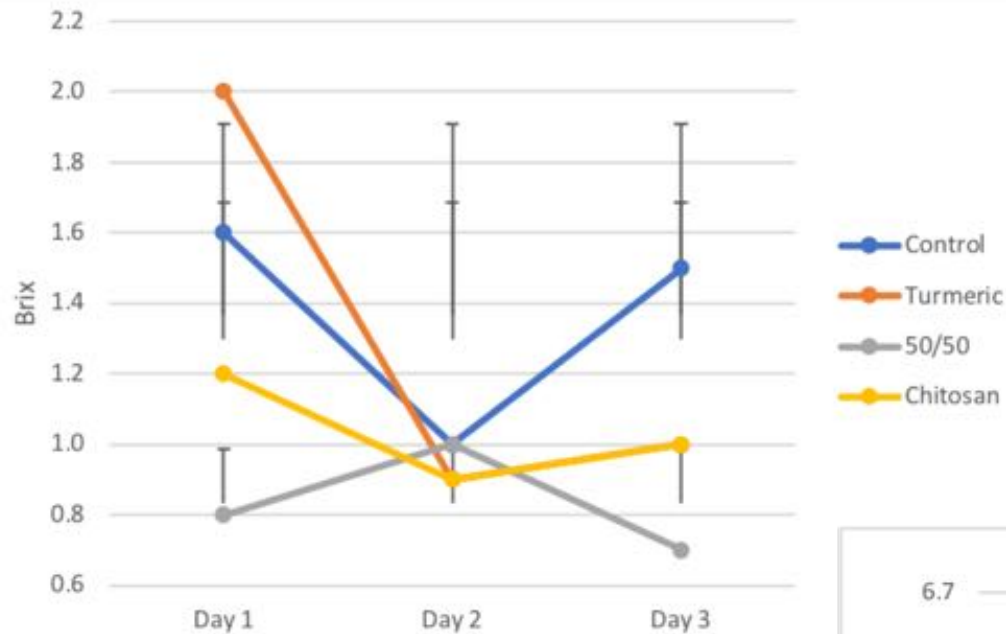


Day 3



pH and Brix

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Firmness

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5. Conclusions

- Chitosan was necessary to enable film manipulation and improve the mechanical properties
- The coating of arracacha was successful using 50/50 blends and only chitosan

Acknowledgements

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