Τμήμα Επιστήμης και Τεχνολογίας Τροφίμων

Hempseed Protein Edible Film Packaging to Tailor Food Properties for Dysphagia Management

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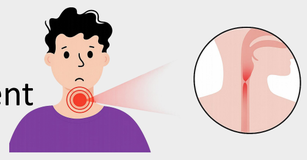
INTRODUCTION & AIM

Proteins are one of the main biomaterials used for the development of **sustainable** and **edible packaging. A**lthough animal-based proteins have been extensively studied, **plant-based** alternatives are increasingly gaining attention due to sustainability, ethical and health consideration.

- High nutrition value-Balanced amino acid profile
- Excellent digestibility-Low allergicity
- Functional properties

Edible films can offer distinct advantages, including texture modifications, which could potentially support the development of dysphagia-friendly foods

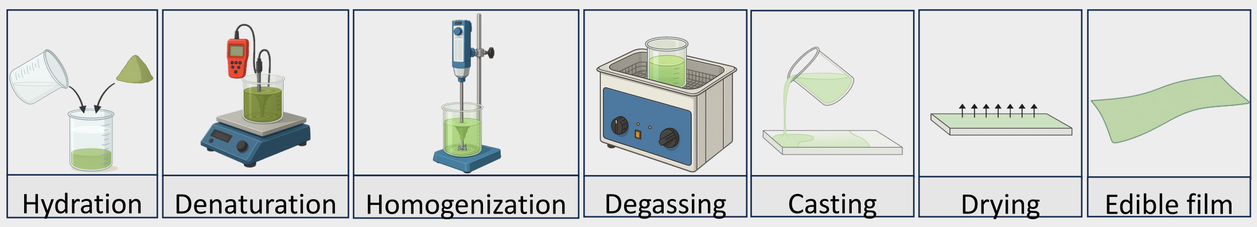


AIM:

Evaluation of **hempseed protein films** as a novel edible packaging strategy for the development of oat-porridge suitable for individuals with **dysphagia**.

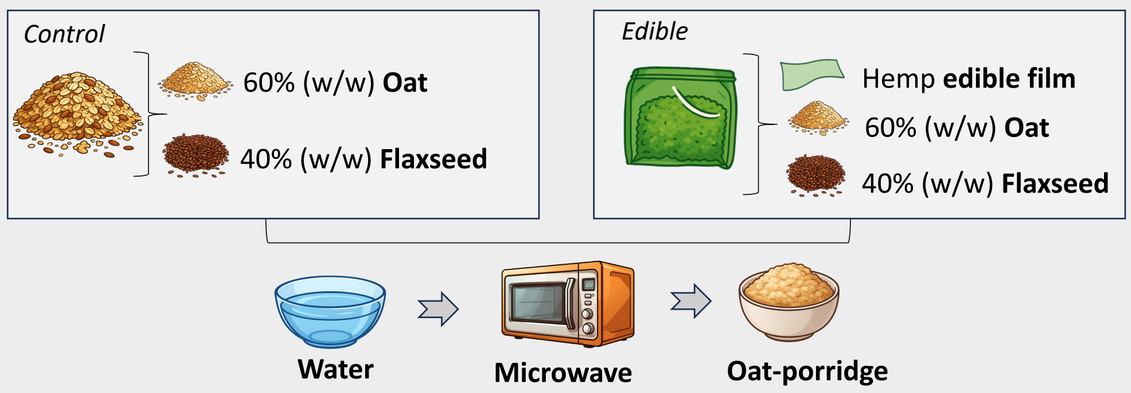
EXPERIMENTAL PROCEDURE

1st step: Preparation of hempseed protein edible films



2nd step: Characterization of hempseed protein edible films

3rd step: Preparation of oat-porridge



4th step: Characterization of oat-porridge

Rheological characterization

IDDSI test*

Sensory evaluation

** International Dysphagia Diet Standardization Initiative*

RESULTS & DISCUSSION

Characterization of hempseed protein edible films

Color: Greenish-brown appearance

Optical properties: Excellent UV light barrier

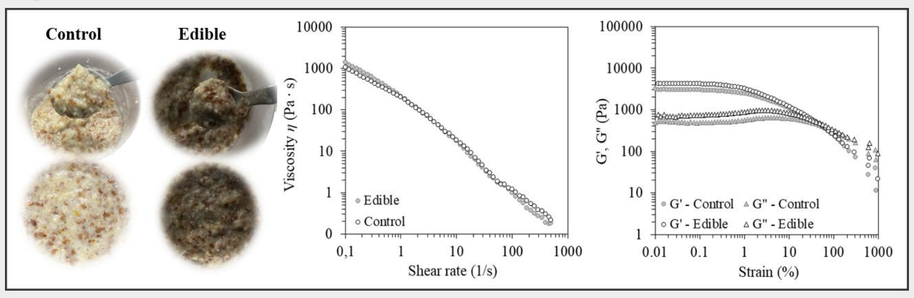
Solubility: 32.99 ± 1.60 %

Thickness: 71 ± 21 μm

Tensile Strength: 6.15 ± 0.29 MPa

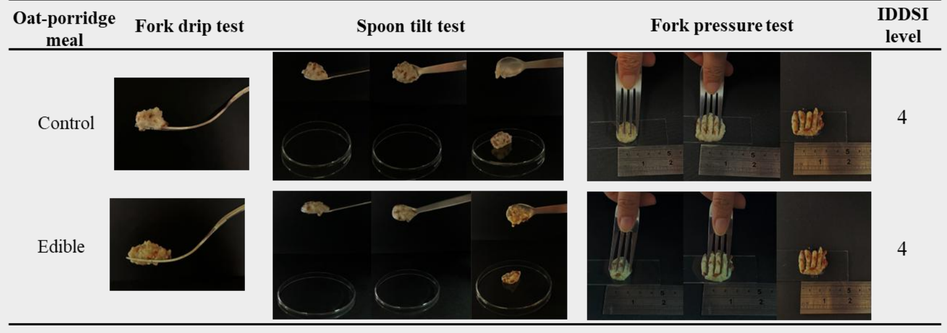
Characterization of oat-porridge

Rheological characterization



❑ Edible film incorporation resulted in a porridge with **lower flow behaviour index (n),** and **more flowable** and **easily deformable structure.**

IDDSI test



❑ Oat-porridge meal **with edible film** packaging: **suitable for dysphagia individuals**

Sensory evaluation

Oat-porridge meal	Appearance	Aroma	Texture	Taste	Overall Acceptability
Control	8.2 ±1.5 [a]	6.5±1.6 [a]	7.1±2.0 [a]	7.6±1.3 [a]	7.0±1.7 [a]
Edible film	8.3 ±1.5 [a]	6.7±1.8 [a]	7.1±1.9 [a]	7.6±1.6 [a]	7.0±2.0 [a]

❑ Edible film **preserved the sensory quality and overall acceptability** of oat-porridge

CONCLUSION

✓ Hempseed protein edible films show strong potential as **sustainable materials** for **instant** or **ready-to-eat meal packaging**.

✓ Edible film enhanced the rheological properties of oat-porridge, suggesting its promising application for the **development of dysphagia-friendly foods.**.