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Meet the presenter

Challenges in exploring microfluidization and enzymatic methods to mitigate soybean allergenicity

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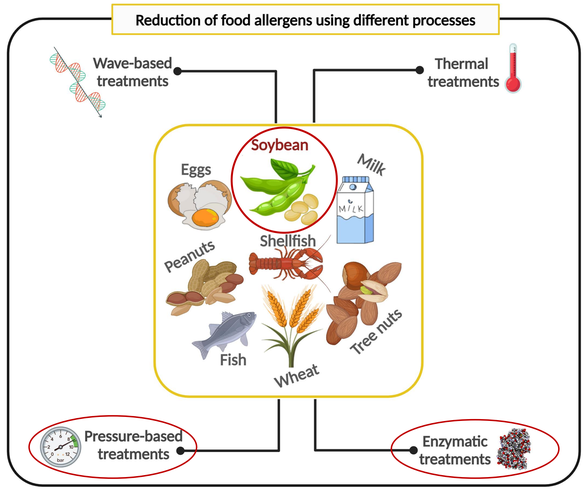
Background

Food allergy is considered a significant public **health challenge** and many attempts have been made to **reduce** the **allergens** using different **processes**.

-***proteins*** are responsible for the ***allergic reactions***



Objective → to reduce soybean allergens using physical treatment(s); further combining with a conventional method (enzymatic hydrolysis) → by changing the protein structure

Methods

Process

- Microfluidization treatment (**MF**) (1, 3, 5 cycles)
- Enzymatic treatment (**E**)

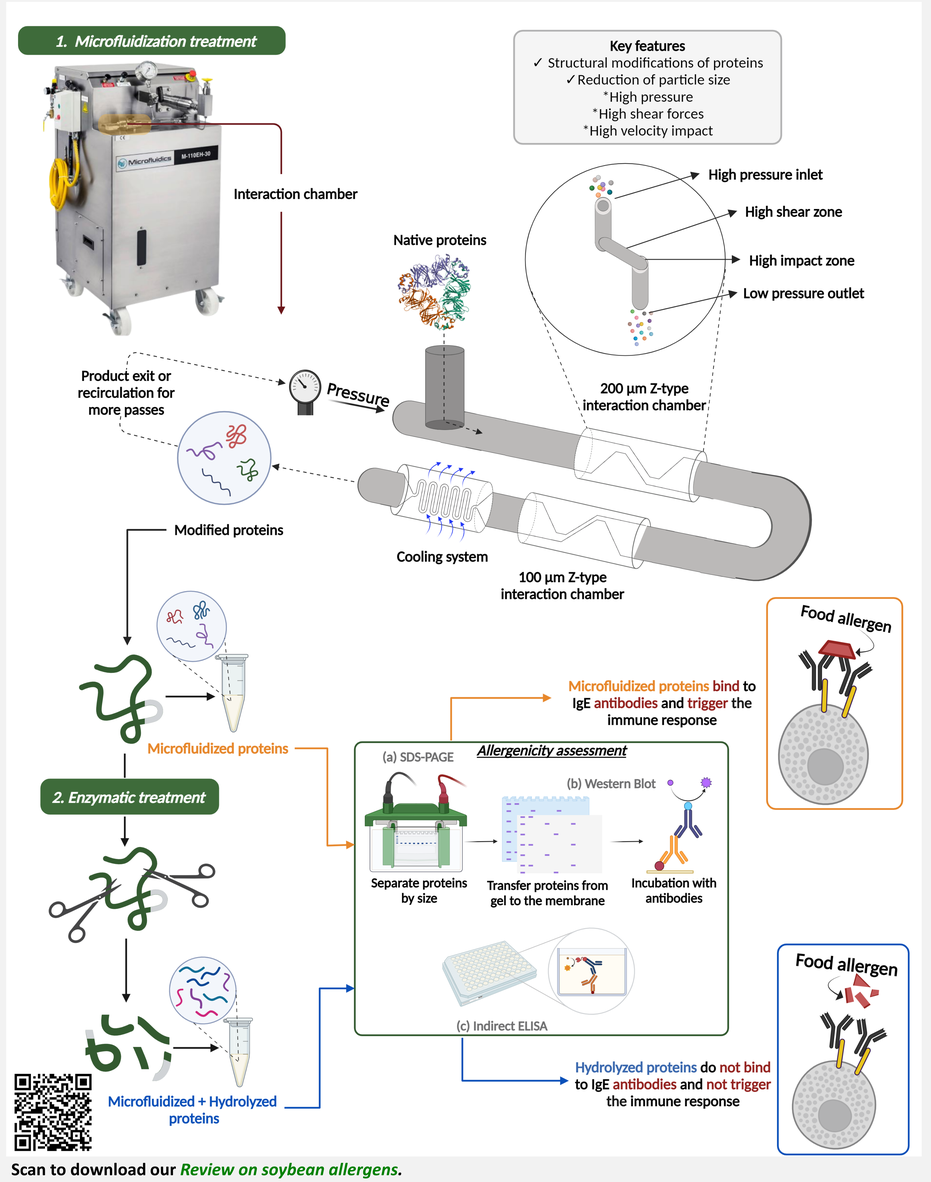
Allergenicity assessment

- **SDS-PAGE** → Separates the proteins according to their molecular weight
- **Western Blot** → Detects the allergens
- **Indirect ELISA** → Quantifies the immunoreactivity

Results and Conclusions

- **A single technique** (MF) **was insufficient** to achieve the reduction of soy allergens.
- **Microfluidization alone** at 3 passes **led** to ↑ in immunoreactivity with **24.1 %**.
- **Enzymatic** hydrolysis ↓ soy allergens by **52.93 %**.
- **Combining** 3 passes of **microfluidization** with **enzymatic** hydrolysis ↓ soy allergens at **63.93 %**.

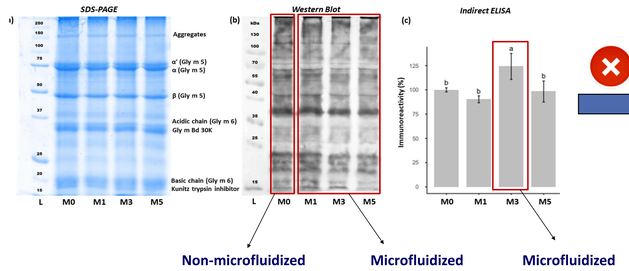
Combination of 2 **techniques** might be a **new strategy** in **reduction** of the soybean **allergens.**



Scan to download our ***Review on soybean allergens***.

Results

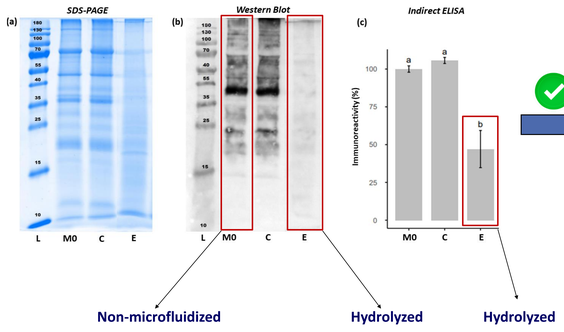
I. Impact of microfluidization treatment on soybean allergens



- **No impact** of **microfluidization** on SDS-PAGE and Western Blot **profile**.
- **Increase** in the allergenicity level.

The major allergens are strongly recognized by the human serum used for Western Blot and ELISA.

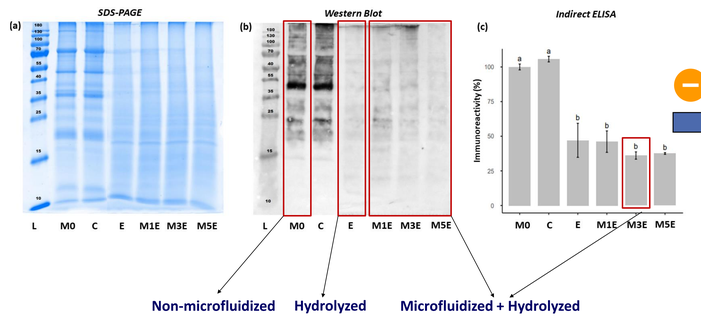
II. Impact of enzymatic treatment on soybean allergens



- **Effective** in **reducing** soy **allergens.**
- **Residual** immunoreactivity of **47.07 %.**

The major allergens are less recognized by the human serum.

III. Impact of combined microfluidization and enzymatic treatments on soybean allergens



Residual immunoreactivity of **36.07 %** for the **combined** treatments.

The major allergens are less recognized by the human serum.

Perspectives

- Confirmation of the results with human study.

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