


Actividades divulgación Proyecto AGROALNEXT_2023/24

Lugar	Sheraton Porto Hotel & Spa.
Localidad	Oporto, Portugal
Provincia	
Fecha	09/04/2024 a 11/04/2024
Proyecto:	LEGUMAX
Código proyecto	AGROALNEXT_2022/030
Grupo de investigación	<p>Instituto Universitario de Ingeniería de Alimentos-FoodUPV de la Universitat Politècnica de València.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>UNIVERSITAT POLITÈCNICA DE VALÈNCIA</p> </div>  </div>

INFORME DE LA ACTIVIDAD:

En el contexto del Congreso “8th International Conference on Food Digestion (ICFD2024)” celebrado en Oporto del 9 al 11 de abril de 2024 y organizado en el marco de INFOGEST, una red global de aproximadamente 700 científicos investigadores (académicos y empresas alimentarias) de 200 instituciones en 52 países y cuyo objetivo principal es "Mejorar las propiedades saludables de los alimentos compartiendo su conocimiento sobre el proceso digestivo" se presentó el poster “Designing protein-rich snack based on fermented fava beans (Vicia Fava)”.

La investigación realizada, vinculada al proyecto AGROALNEXT_2022/030: “Desarrollo de nuevos productos saludables y sostenibles basados en legumbres fermentadas para la prevención del sobrepeso infantil (LEGUMAX)” tenía como objetivo evaluar el efecto que sobre las propiedades funcionales y la digestibilidad de los nutrientes presentes en barritas producidas con habas tenía la aplicación sobre las mismas de diferentes tratamientos (remojado, esterilizado y fermentado). Se demostró que las habas podrían ser un ingrediente rico en proteínas beneficiosas con un perfil funcional mejorado para la producción de snacks (barritas) gracias a que la fracción bioaccesible de las barritas fermentadas sufrió un aumento en el contenido de aminoácidos así como una inhibición de la ECA.

FOTOS DE LA ACTIVIDAD:



8th International Conference on Food Digestion

Porto, 9-11th April 2024

Sheraton Hotel & spa

P63 | Visualization and assessment of damage of dietary nucleic acids from raw and processed food
Koscielak, Anna; Kozłara, Zuzanna; Ciesiewicz, Joanna; Bartoszek, Agnieszka

P64 | Enrichment of apple microbiome and its survivability during simulated gastric digestion
Gao, Zhujun; Blaustein, Ryan A.; Bomhorst, Gail M.; Niñ, Niñ; Tikekar, Rohan V.

P65 | An In vitro setup to monitor the gastric digestion of solid foods with ultrasound
Li, Xinhang; Capuano, Edoardo; De Korte, Chris; Smeets, Paul A.M.

P66 | Are plant-based drinks equivalent to cow's milk in terms of ingredients and protein quality?
Refo, Portmann; Barbara, Walther; Brügger, Cédric; Guggisberg, Dominik; Dubois, Sebastien; Badertscher, René; Egger, Lotti; Rezzl, Serge

P68 | Importance of the coacervation process of gelatin with gum Arabic for in vitro digestion
Katarina Kolomyiets, Katarina Kolomyiets; Welssbrodt, Jenny; Brodtkorb, Andre

P69 | Microstructural characterization and digestibility of polysaccharide-grass protein microcapsules
Mora-Saenz, María Gloria; Brodtkorb, André; Pérez-Vila, Sara; Sepúlveda-González, Allyne; Gómez-Mascaraque, Laura G.

P70 | Compositional analysis and In vitro digestibility of alternative protein sources
Hernandez-Olivas, Ever; Giblin, Linda; Brodtkorb, Andre

P71 | Impact of heating on in-vitro protein digestibility and functionality of fava bean protein isolates
Sharma, Neha; Gwala, Shannon; Kamari, Mohammad; Murphy, Eoin; Owens, Rebecca; Giblin, Linda; Brodtkorb, Andre

P72 | Highlighting the antioxidant and hypocholesterolemic properties of peptides from spirulina (*Arthrospira platensis*).
Deracinois, Barbara; Dugardin, Camille; Benneour, Ikram; Marechal, Esteban; Neuray, Jacques; Jacques, Philippe; Fiahaut, Christophe; Ravalet, Rozenn

P73 | Cellulose nanofibers-stabilized Pickering emulsions: Characterization and emulsion digestion
Chevalier, Raquel; Oliveira Júnior, Fernando; Cunha, Rosiane

P74 | Induced viscosity-milkshake reduced the calorie intake without a compromise in lipid digestion
Kasprzak, Mirosław; Pająk, Paulina; Tullberg, Cecilia; Lett, Aaron; Krystijan, Magdalena; Hetherington, Marion M.

P75 | The Impact of Initial food structure on gastric digestion in solid carbohydrate-based foods
Sun, Wey; Bomhorst, Gail

P76 | Rice and rapeseed side streams: Impact of phytic acid reduction on gelation properties and in vitro protein digestion
Kortekangas, Anni; Rosa-Sibakov, Natalia; Nordlund, Emilia; Silventoinen-Veljalainen, Pia; Sözer, Nesil; Kolehmäinen, Marjukka

P77 | The Influence of tea preparation on *Ganoderma lucidum*'s Triterpene bioaccessibility
Bobrowski Rodrigues, Daniele; Cardoso, Rossana; Murrube, Nelvaldo; Petros, Peter; Puro, Eric; Barros, Lillian

P78 | Designing protein-rich snack based on fermented fava beans (*Vicia faba*)
Khvostenko, Kateryna; Muñoz-Pina, Sara; Garcia-Hernández, Jorge; Heredia, Ana; Andrés, Ana



Figura 1. Programa de Posters donde se incluye el poster presentado: “Designing protein-rich snack based on fermented fava beans (Vicia Fava)”.

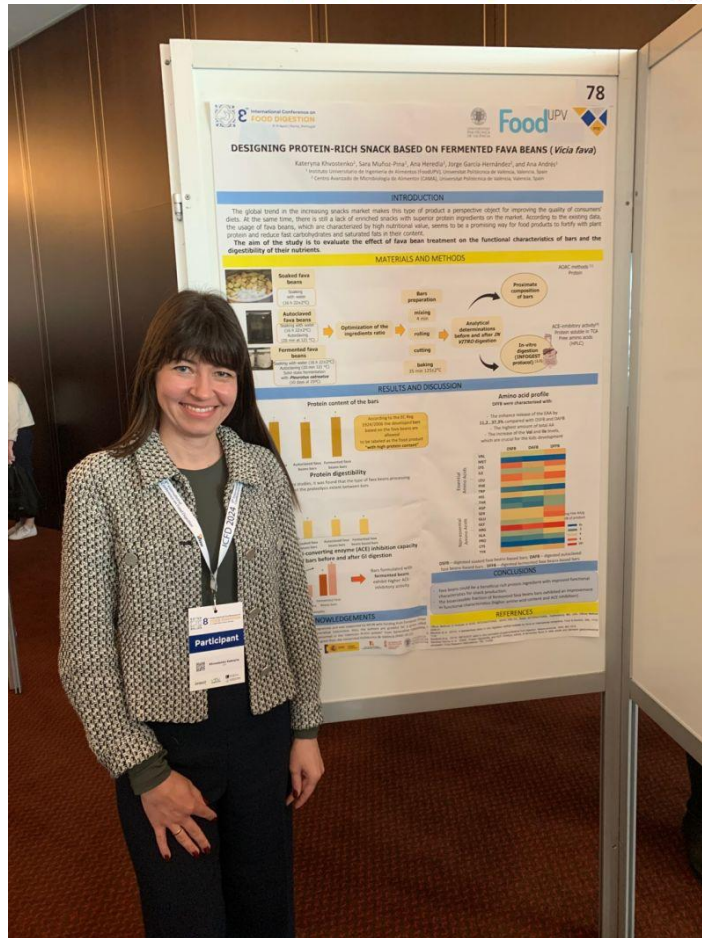


Figura 2. Presentación por parte de la investigadora Dra. Kateryna Khvostenko del poster: “Designing protein-rich snack based on fermented fava beans (Vicia Fava)”.

DESIGNING PROTEIN-RICH SNACK BASED ON FERMENTED FAVA BEANS (Vicia fava)

Kateryna Khvostenko¹, Sara Muñoz-Pina¹, Ana Heredia¹, Jorge García-Hernández², and Ana Andrés¹

¹ Instituto Universitario de Ingeniería de Alimentos (FoodUPV), Universitat Politècnica de València, Valencia, Spain

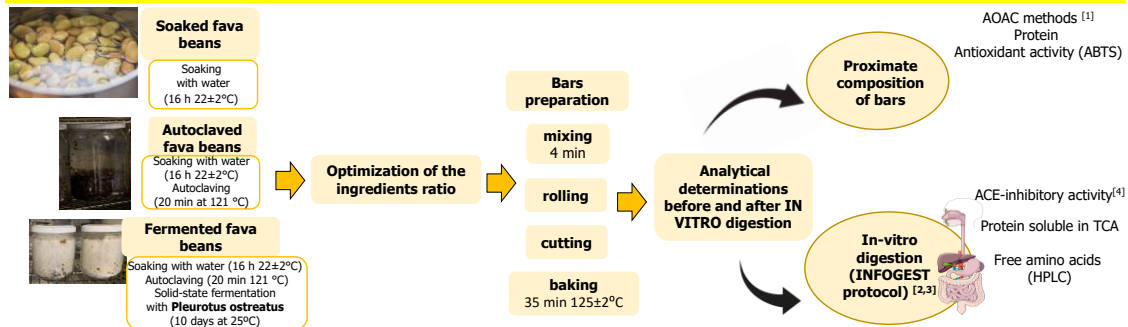
² Centro Avanzado de Microbiología de Alimentos (CAMA), Universitat Politècnica de València, Valencia, Spain

INTRODUCTION

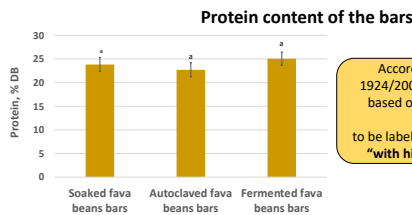
The global trend in the increasing snacks market makes this type of product a perspective object for improving the quality of consumers' diets. At the same time, there is still a lack of enriched snacks with superior protein ingredients on the market. According to the existing data, the usage of fava beans, which are characterized by high nutritional value, seems to be a promising way for food products to fortify with plant protein and reduce fast carbohydrates and saturated fats in their content.

The aim of the study is to evaluate the effect of fava bean treatment on the functional characteristics of bars and the digestibility of their nutrients.

MATERIALS AND METHODS



RESULTS AND DISCUSSION



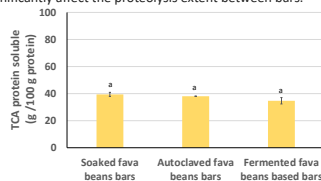
Amino acid profile

DFFB were characterized with:

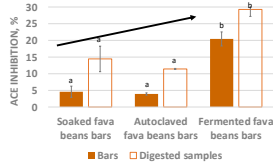
- The enhance release of the EAA by 11,2...37,3% compared with DSFB and DAFB
- The highest amount of total AA
- The increase of the Val and Ile levels, which are crucial for the kids development

Protein digestibility

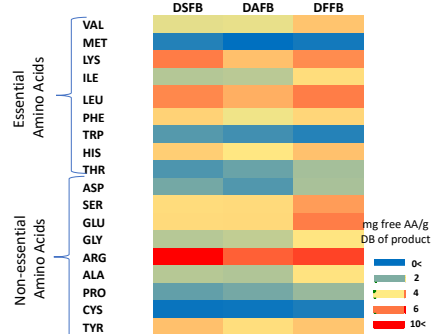
Based on the *in vitro* studies, it was found that the type of fava beans processing didn't significantly affect the proteolysis extent between bars.



Angiotensin I-converting enzyme (ACE) inhibition capacity of bars before and after GI digestion



Bars formulated with fermented beans exhibit higher ACE-inhibitory activity



DSFB – digested soaked fava beans-based bars; DAFB – digested autoclaved fava beans-based bars; DFFB – digested fermented fava beans-based bars

CONCLUSIONS

- fava beans could be a beneficial rich protein ingredient with improved functional characteristics for snack production;
- the bioaccessible fraction of fermented fava beans bars exhibited an improvement in functional characteristics (higher amino acid content and ACE inhibition).

REFERENCES

- Official Methods of Analysis of AOAC INTERNATIONAL. (2023) 22th Ed.; AOAC INTERNATIONAL, Gaithersburg, MD, USA, Official Methods 2008.01.
- Minekus et al., (2014). A standardised static *in vitro* digestion method suitable for food—an international consensus. *Food & function*, 5(6), 1113-1124.
- Brodborb et al., (2019). INFOGEST static *in vitro* simulation of gastrointestinal food digestion. *Nature protocols*, 14(4), 991-1014.
- Sánchez-García et al., (2024). Protein digestibility and ACE inhibitory activity of fermented flours in older adults and standard gastrointestinal simulation. *Food Research International*, 180, 114086.

ACKNOWLEDGEMENTS

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Figura 3. Poster "Designing protein-rich snack based on fermented fava beans (Vicia Fava)" presentado por parte de la investigadora Dra. Kateryna Khvostenko.

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Firma del IP1.

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