Allergen-Free Vegan Cured Ham

Brief description

Researchers from the TECNOLALIMA group, specializing in animal origin food technology, have developed a method for producing a prototype of ham that replicates the characteristics of conventional dry-cured meat ham—including its marbled appearance—while being made entirely from plant-based ingredients. Notably, the formulation excludes all allergenic components, particularly gluten and soy. Both the production method and the resulting ham have been protected under patent ES2976138A1.

How does it work?

The method for producing this vegan ham prototype involves the preparation of two distinct matrices : a plant-based "meat matrix" that mimics the muscle tissue of conventional dry-cured ham, and a plant-based "fat matrix" that replicates its adipose component. Once appropriately distributed, both matrices undergo simultaneous co-gelation, resulting in a structure that, when sliced, visually resembles a traditional cured ham slice.

Due to the absence of soy and gluten, achieving a stable protein network capable of maintaining the structural integrity of the ham posed a significant challenge for the food industry—one that the researchers successfully overcame.

To facilitate co-gelation, the matrices are first preformed or molded. After layering, they are subjected to vacuum packaging or compression in pressure molds, followed by thermal processing. This procedure enables the slicing and subsequent vacuum packaging of the resulting plant-based cured ham.

Figure 1. *Internal structure of jackfruit*

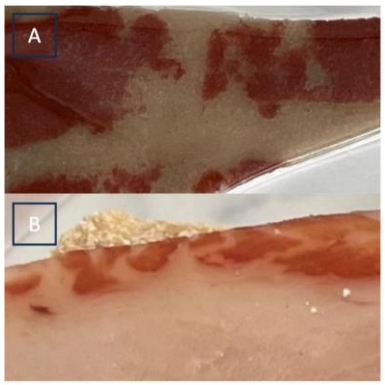

Figure 2. *Differences in the marbling pattern between the plant-based ham prototype (A) and traditional Serrano Ham (B).*

Figure 3. *Visual appearance of the plant-based cured ham prototype*

Medicine Faculty. Entrepabellones building 7 y 8.
C/ Doctor Severo Ochoa, 7. 28040 Madrid.
comercia@ucm.es

What problem does it solve?

The development of this plant-based cured ham prototype, which closely replicates the characteristics of conventional dry-cured meat ham—including its marbled appearance—offers individuals within the diverse vegan community, as well as those with dietary restrictions due to mandatory-declaration allergens, whether vegan or not, the opportunity to consume a product aligned with their nutritional and ethical needs.

What future products will it develop?

The resulting product is a plant-based analogue of dry-cured ham, free from mandatory-declaration allergens.

Competitive advantages compared to other research

The resulting product is a plant-based analogue of dry-cured ham, free from mandatory-declaration allergens. The method developed to produce this vegan ham prototype successfully addresses the challenge of formulating a cured ham without incorporating any ingredients classified as mandatory allergens under Royal Decree 126/2015, particularly excluding gluten-containing products and soy derivatives.

Furthermore, the selected ingredients for each of the two matrices confer nutritional properties comparable to those of conventional meat-based cured ham, specifically in terms of protein, carbohydrate, fat content, and lipid profile. One of the key contributors to this nutritional equivalence is jackfruit—a tropical fruit native to Indonesia—whose fibrous texture and appearance resemble shredded meat. Remarkably high in protein for a fruit, jackfruit is incorporated at a proportion of 25–40% of the total meat matrix.

Where has it been developed?

The development was carried out at the Complutense University of Madrid, specifically within the Departmental Section of Pharmaceutical Technology and Food Engineering at the Faculty of Veterinary Medicine. The research group possesses extensive expertise in the design and optimization of plant-based food matrices, with particular emphasis on the study of rheological, textural, and functional properties, as well as the application of advanced processing technologies aimed at producing meat and fish analogues. Lorem Ipsum

And furthermore…

The research group offers its expertise in the design and optimization of plant-based food matrices to companies, providing support in the development of prototypes with sensory and nutritional properties comparable to those of animal-derived products. In addition, the group provides technological consultancy in gelation processes, packaging, preservation, and industrial scaling, as well as in the formulation of allergen-free and sustainable protein alternatives. The team is open to establishing scientific and technical collaborations, engaging in R&D&I projects with industry, and pursuing technology transfer agreements aimed at patent licensing and commercialization.

Researcher in charge

María Blanch Rojo, mblanchr@ucm.es; Helena María Moreno Conde, helena.moreno@ucm.es y Lucía Ruiz Ruiz, luruiz01@ucm.es
Departament: **Farmacia Galénica y Tecnología Alimentaria**
Faculty: **Veterinaria**