BResilient

B-RESILIENT SUCCESS STORIES

Fungi-based By-products revalorization with real time monitoring.

FBRM

INNOVATION PROJECT

The FBRM project aims to develop large batches of sustainable and nutritious fungi-based burgers employing food industry by-products as a substrate, while ensuring accurate and timely assessment of their texture, protein and nutrient content thanks to a photonic based solution for real-time monitoring of the production.

PROJECT OBJECTIVES

The FBRM project has two main objectives, on the one hand to develop a system for monitoring solid-state fermentation from by-products of the food industry and on the other hand to develop a quality ontrol system for the final product hat will allow to obtain in seconds the protein concentration of each produced burger, thus ensuring the quality of the entire production.

"Thanks to the support of the B-Resilient programme, we have been able to carry out the development of the FBRM project, thus contributing to building resilience in the agri-food ecosystem and accelerating the transition of SMEs towards a green and digital economy."

EXPECTED BENEFITS

Innomy's innovative approach offers several expected benefits and potential application area, like Sustainability (by utilizing food industry by-products as a substrate) and Health Consciousness as Fungi-based burgers have the potential to be lower in saturated fats and cholesterol.

The fermentation monitoring system to be developed by AOTECH in this project will allow greater control of the process as it will enable real-time decision-making to correct any deviations that may occur in the process. This will optimise the process, achieving greater efficiency, as it will ensure that the final product meets the quality requirements previously defined.

On the other hand, these quality requirements will be monitored with the second system to be developed during the project, thus ensuring the quality of the final products. It is also important to highlight that once the systems for the production of alternative protein using fungi have been demonstrated to work well, these systems can be applied to other manufacturing methods such as those using insects, algae or plant biomass.

MEET THE SME'S BEHIND FBRM

PROJECT PARTNERS

Innomy is a start-up created in 2018 in Argentina, and incorporated in Spain since 2021. It develops innovative solutions for the food industry based on Mycelium. The company's objective has always been to provide high quality alternative protein products, like different meat analogues (burgers, sausages, meatballs), texturized protein ingredients and functional flours. Since 2023 the company's focus is to re-valorise food industry by-products in order to provide a disruptive solution to Food companies and invite them to engage in a circular economy system.

The entire project will be done at Innomy's facilities by the company's R&D Team. The team is headed by Dr Francisco Kuhar, PhD in Biology, whose knowledge of Mycology and his large expertise in the academic field are the starting point of Innomy's innovations.

AOTECH is a start-up created in 2019 whose mission is to apply photonic solutions to all kinds of industrial processes. AOTECH aims to be a transversal supplier of photonic solutions, so they are developing several technologies that can be the key to disrupting solutions in the near future. For the food industry, AOTECH is developing the AONIR platform, which will allow in-line and real-time characterisation of food production from the incoming of raw materials to the final product using NIR spectroscopy. The system has been validated for dairy and bakery sectors working in semi-real conditions. This project aims to apply this platform to the production of alternative proteins.

AOTECH has carried out different R&D projects developing solutions in the food industry such as CAD2P, P4B, Espectrolive and monitoring of fruit drying process, among others.

ROLE IN THE PROJECT

Innomy will focus on optimizing the growth conditions of the fungi on the food industry by-products. Extensive research and development activities will be conducted to refine the recipe, texture and taste of the fungi-based burgers. The company will provide several batches in order to get valuable data for AOTECH's machine learning predictive model building, which will help the final solution to work properly. Once this is complete, the project will progress to the production and testing stage. Innomy will scale up their production capabilities to produce large batches of burgers using the optimized recipe.

On the other hand, AOTECH participation in the project fulfils a double objective of developing a system for real-time fermentation control and quality control of the final product. For both purposes, NIR spectroscopy and artificial intelligence will be used. For the first objective, spectra will be acquired throughout the fermentation process, and a predictive model will be created to determine the optimum fermentation point of the product, which will provide a powerful tool for automating the production process in the future. At the same time, a quality control system for the final product will also be designed to obtain in seconds the protein concentration of each produced burger, thus ensuring the quality of the entire production.

Co-funded by the European Union

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