

# Blue Project promotes new scientific results

Scientific research is one of the fundamental pillars of the Blue Project, and several dozen university researchers are dedicated to it. Having as its motto the nutritional and economic use of Atlantic bonito, the scientific results have been presented in discussion sessions between partners.

Discover the evidence produced in three distinct areas, namely:

1. Conversion of atlantic bonito skin into leather
2. Development of a pâté from your surplus
3. Study of Atlantic bonito conservation techniques

## Treatment and tanning - atlantic bonito skin Centre for Textile Science and Technology (2C2T)

One of the main objectives of Blueproject is related to the conversion of the Atlantic bonito skin into a valuable-added product, thus closing the cycle in terms of circular economy and production. On this topic, the Centre for Textile Science and Technology (2C2T) is responsible for the conversion of the Atlantic bonito skin into leather in order to produce a valuable product to be used in the textile industry, exploring simple and scalable procedures while avoiding the use of environmentally unfriendly product such as chromium-based compounds.

In this presentation, we will expose the work that has been performed up to this point, which is divided into 3 main topics:

- 1) Bibliographic search on tanning processes, particularly fish skin leather tanning procedures.
- 2) Planification of the work to be performed and protocol design.
- 3) Laboratorial work, encompassing the fish leather tanning experimentation and optimization.

At this point, we have produced some leather samples, which could eventually be presented at the Open day, if the organizing committee deems it valuable.

## Development of an Atlantic bonito pâté through the use of surplus

The team at Instituto Politécnico de Viana do Castelo developed a pâté formulation from Atlantic bonito surplus and, in this way, it is possible to obtain significant nutritional benefits and reduce waste. Brassica surpluses, resulting from the fruit and vegetable industry, were also added to the pâté formulation.

The pâté produced can be a rich source of proteins, omega-3 fatty acids, vitamins, essential minerals and antioxidants, and in addition, this product aligns with the principles of the circular economy, in which by-products are valued and reintroduced into the chain productive.

To evaluate the best responses in the development of the pâté, an experimental design was used, a factorial method with 3 factors and 2 levels,  $3 \times 2$ . The effect of concentrations of hydrocolloid (sodium alginate), at 0.5 and 1% (g/g), of Brassicas, at 1 and 2% (g/g), and heat treatment temperature, 105, was studied. °C and 115 °C, on the physical-chemical, texture and sensory properties of atlantic bonito pâté.

With this work it was concluded that the use of Atlantic bonito by-products, such as bones and skins, together with Brassica by-products to produce a nutritionally rich pâté is a promising strategy to promote sustainability and the circular economy, contributing to the reduction of waste, preservation of resources.

## Study of conservation techniques in Atlantic bonito fillets

The team from the Polytechnic Institute of Viana do Castelo studied different techniques for preserving Atlantic bonito fillets over 14 days, namely refrigeration at 4°C, coating application, modified atmosphere (30% CO<sub>2</sub> and 70% N<sub>2</sub>), and vacuum, all these techniques combined with refrigeration at 4°C, and also the freezing technique (-18°C).

These techniques were applied to fresh Atlantic bonito fillets and the physical-chemical, microbiological, sensory, texture and color properties were evaluated throughout the storage time.

The results obtained for the different conservation techniques reveal that there are no differences regarding the values obtained for water activity, ash content, lipids, fiber and protein, regardless of the conservation technique.

It was concluded that the freezing technique allows Atlantic bonito fillets to be preserved for longer while maintaining some stability in their texture properties.