

Cunha, S. A., Nova, P., Sarmiento, B., Costa-Pinto, A. R., & Pintado, M. E. (2022). *Mussel meat waste as a source of bioactive ingredients for industrial application*. Abstract from 2nd Online Conference – Circular Economy: Make It Happen, Portugal.

Mussels are considered a delicacy appreciated in several countries, including Portugal. For commercialization, mussels need to fulfil the market criteria, such as size and condition [1]. Thus, before being commercialized, mussels need to be pre-selected according to the target market requirements. Consequently, broken mussels or those with size out of the established criteria are discarded, corresponding to about 27% of the produced mussels [2]. *Mytilus galloprovincialis* is rich in proteins and, consequently may be used to produce bioactive hydrolysates. Thus, in this study, we have used discarded mussel meat to obtain hydrolysates rich in proteins/peptides with bioactive properties. Mussel meat was minced until homogenised and then hydrolysed with a selected protease. The resulting hydrolysate showed 45% protein, antioxidant activity (ORAC assay) of 486  $\mu\text{mol TE/g}$  of extract and anti-diabetic potential, since it was able to inhibit 90% of  $\alpha$ -Glucosidase activity (30 mg/mL). The hydrolysate antioxidant potential is interesting for food and anti-aging cosmetics, since it may help control radical oxygen species generation. However, for food or supplements industries the antioxidant activity must be maintained after ingestion. So, the hydrolysate was submitted to an in vitro simulation of the gastrointestinal (GI) tract. We have verified that the antioxidant potential is maintained throughout all the GI steps, reinforcing the high potential of the hydrolysate for industrial applications. So, in this work, it was intended to give a regenerative approach to discarded mussels, by transforming their meat into hydrolysates rich in proteins/peptides and bioactive properties. The produced hydrolysate showed potential as antioxidant and anti-diabetic ingredients, able to resist to gastrointestinal digestion steps, revealing a high potential as an ingredient for the development of functional foods, supplements, or cosmetic formulations. This way, we can produce natural and sustainable value-added ingredients for commercial purposes, aligned with industrial and consumer trends while valorising mussel waste in a circular economy context.

1. Medina Uzcátegui, L.U.; Vergara, K.; Martínez Bordes, G. Sustainable alternatives for by-products derived from industrial mussel processing: A critical review. *Waste Manag. Res.* 2021, 734242X21996808, doi:10.1177/0734242X21996808.

2. Cunha, S.A.; de Castro, R.; Coscueta, E.R.; Pintado, M. Hydrolysate from mussel *mytilus galloprovincialis* meat: Enzymatic hydrolysis, optimization and bioactive properties. *Molecules* 2021, 26, doi:10.3390/molecules26175228.