

# Mushroom Protein



 [like-a-pro.eu](https://like-a-pro.eu)

 [project-like-a-pro](https://www.linkedin.com/company/project-like-a-pro)

**LIKE-A-PRO is a EU-funded project aiming to facilitate sustainable and healthy diets by mainstreaming alternative proteins and products, making them more available, accessible and acceptable.**

## Mushroom Protein Benefits

Cultivated mushroom proteins are those protein-rich concentrates extracted from edible mushrooms, providing a complete amino acid profile, and a source of bioactive compounds (e.g.,  $\beta$ -glucans) which provide antioxidant, anti-inflammatory, antimicrobial properties and a prebiotic potential. Mushroom proteins can be obtained from cultivated biomass and non-marketable residues such as stems and malformed or leftover fruiting bodies, as they are by-products rich in proteins that offer a valorisation pathway while supporting circularity.

These non-marketable leftovers correspond to around 60,000-250,000 tonnes in Europe annually, leveraging a promising revalorisation potential.



## Extraction Challenges

Current approaches for mushroom protein extraction face several limitations including low recovery rate, often below 10%, high dependence on species-specific parameters, complex solid-liquid separation and intensive operations in terms of energy and water consumption.



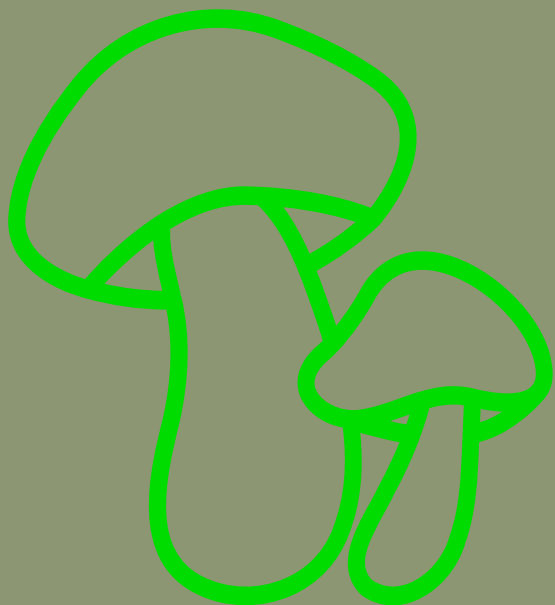
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## Optimised Extraction Process

As part of LIKE-A-PRO project, **CTICH** focused on optimising the valorisation of mushroom stems generated during the preparation of marketable fruiting bodies of *A. bisporus*, *P. ostreatus*, and *L. edodes* for protein extraction with the aim of maximising yield and protein content while ensuring protein quality and functionality. This was achieved through the development of a novel 6 steps extraction method which was further scaled achieving an increased extraction yield and an increased protein content from *A. bisporus* on semi-pilot conditions (around 400L).

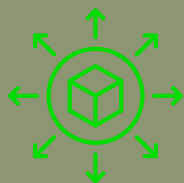


**CTICH process was proven as a new circular valorisation route for available underutilised mushroom biomass with the following characteristics:**



### High economic viability and alignment with consumer demand

An associated strong **cost reduction of over 97%** through significant reduction in energy demand. Alignment with **growing consumer demand** for sustainable, ethical, and natural protein alternatives that enable clean-label food formulations.



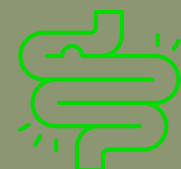
### Reliable and underutilised feedstock supply

**High availability** of fresh mushroom stems and **discarded fruiting bodies** (around 60,000-250,000 tonnes in Europe annually).



### Technical feasibility

The extraction process is technically feasible at semi-pilot scale, particularly for *A. bisporus* extracts, which is the most cultivated edible mushroom with a **38% of global share**.



### Strong nutritional and functionality performance

The resulting protein concentrate powders offer high-protein content (>40%), a **complete amino acid profile**, **bioactive compounds**, **good digestibility** and **functional versatility** for food applications, including **meat analogues**, **hybrid products** and **ready meals**.

To translate this technical solution into market adoption, CTICH business model is built on a **non-exclusive licensing strategy**, transferring its proprietary known-how, initially protected as trade secret and potentially strengthened through patenting once specific optimised processes are validated, to industrial customers. This approach may be supported by optional R&D services tailored to customer needs to drive interest and early adoption. With continued upscaling, a phased roadmap foresees **commercial deployment for this process within ~8 years**, including process optimisation, industry engagement, investment, and Novel Food approval of the protein ingredient.

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