

## Deliverable 3.1

# Report on extraction results of Spent Mushroom Substrate

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**Author:** CENER

**Contributors:** Monaghan Mushrooms, MetGen, Celignis

### PUBLISHABLE SUMMARY

The BIOrescue project aims to develop and demonstrate a new innovative biorefinery concept based on the cascading use of spent mushroom substrate (SMS) supplemented by wheat straw (and other seasonal underutilised lignocellulosic feedstocks). Within this biorefinery concept, the first step is a two-stage process (Separation and fractionation) which aims to fractionate SMS into different components that can be subsequently transformed and/or upgraded into valuable bio-based products. This report includes the technical evaluation of the **extraction process** developed within the BIOrescue project during the first year of the project. This extraction step involves soaking the SMS in water for a set residence time, followed by a separation process by filter press in order to split the SMS into an extractive-free solid and an extraction liquid. A flowchart of the process is described in Figure 1:

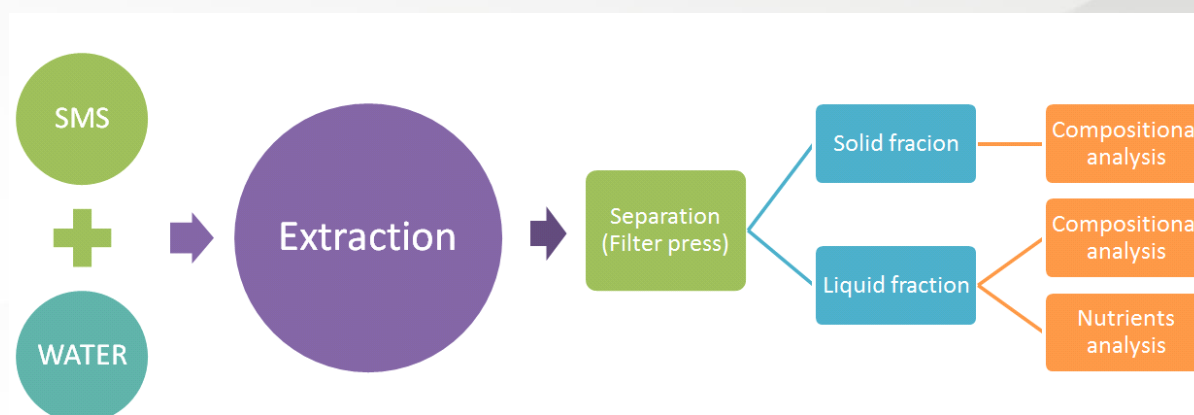


Figure 1: General flowchart of the extraction process applied to SMS and samples generation for analysis.

Specifically, this report contains information regarding the extraction process (selected conditions and assays carried out) and composition of both solid and liquid fractions generated, paying special attention to the compositional analysis of the extracted liquid. It is worth to mention that more detailed information about compositional analysis of the solid fraction and bio compounds detected in the liquid fraction can be found in report D3.2 (Report on analysis of bioactive enzymes and extractive free solids).

Throughout the extraction process the following key information have been collected:

- Preliminary extraction assays showed that the longer residence time combined with a ratio of SMS:Water of 1:2, solubilized a higher amount of solubles;
- The extracted fraction (or liquid fraction), shows almost no soluble sugars, organic acids or furfurals. In fact, most of the protein content remains in the solid.