



The partners of the LOOP4PACK project are pleased to announce that the deliverable D2.2, "Separation and purification of PHA: Scale-up of the chosen PHA recovery method" is finalized and has been sent to all partners on 29/11/2022. This deliverable was written by Fanny Allayaud and Elise Blanchet (INSA-CRITT Bio-Industries).

Summary of the deliverable:

The first part of this study (T2) was the development of an alternative protocol for the extraction and purification of PHAs produced in Task 1 in pure culture or mixed culture. After different laboratory scale tests (Deliverable D2.1), the chosen protocol includes a cell disruption step with a high pressure homogenizer (HHP) in pH controlled conditions with a buffer solution. After an additional step to improve the solubilization of impurities, the PHA (in solid phase) is separated by centrifugation, before washing, drying and grinding into powder.

The purpose of this deliverable D2.2 is to present in details the protocol developed on a small scale (on approximately 4 dry grams per test) before reporting the scaling up (x100) by applying it to 2 biomass batches of approximately 350 and 500 g of dry matter. The batches provided by the partner UM-IATE (T1) are from pure cultures of *Cupriavidus necator*. They are cells containing about 70w% P(3HB-co-3HV) with a HV content of 18mol% and 28mol%.

The scaling up of the protocol was validated with 94% and 97% purity of the extracted PHA, and a preserved molar mass (>800 kDa) similar to those obtained at laboratory scale. The recoveries (78% and 71%) are slightly lower at this scale, probably due to losses during the centrifugation and grinding steps.

The extracted PHAs (180g and 270g) were transferred to the UM-IATE partner for task 3. The quantities obtained allow to investigate further the thermal characterization (DSC, TGA), and especially to carry out a mechanical characterization thanks to the production of films by compression molding and to start the formulation part planned in the project

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This project has received funding from the Agence Nationale de la Recherche under grant agreement N#ANR-19-CE43-0006

