

LIFE YEAST

Recycling
brewer's spent yeast
in innovative
industrial applications



ABInBev



LIFE is a funding instrument of the EU which supports the environment and climate action.

The objective of LIFE is to contribute to the implementation, update and development of EU environmental and climate policy and legislation by co-financing projects which add value to Europe.

Since 1992, LIFE has co-financed more than 4,300 projects.



In 2017, the European Commission has approved the co-financing of **THE LIFE YEAST PROJECT**

In total approximately € 1.600.000 was granted to the LIFE YEAST consortium.

With the LIFE YEAST project, the different partners of the consortium BDi Biotechnology, VLPbio and AB InBev join forces together to increase resource efficiency, contribute to a circular economy and create a better world.



BACKGROUND

During the brewing process, yeast is added to initiate fermentation, converting sugar to alcohol and carbon dioxide. Before full maturation of the beer, the excess yeast is collected and can be re-used in the brewing process up to around six times. After this, it becomes brewer's spent yeast (BSY). With 15% of the total by-products generated during brewing, BSY is the second biggest by-product of the brewing process. It is an interesting by-product since it contains a high level of nutrients and several technologies exist that can turn this by-product into a valuable resource. However, to date its industrial utilization is very limited because of the fast contamination and spoilage of BSY as a result of the activity of micro-organisms. This has hampered the large scale use of some technologies for using BSY. Drying the spent yeast can make it last longer, but this is an expensive process that requires large amounts of energy. Hence spent yeast is mainly sold in its wet form as animal feed to farmers.



PROJECT OBJECTIVES

The objective of this LIFE project is to develop a new and innovative method to use BSY as a raw material.

By developing alternative uses of BSY, BDi biotechnology and AB InBev, main partners of **THE LIFE YEAST PROJECT**, strive to build a more sustainable brewing process and increase resource efficiency, fully compliant with the circular economy concept. These goals are totally aligned with our dream to create a better world. Therefore LIFE YEAST aims to contribute to the transition towards a circular economy by:



developing a new methodology to process BSY into valuable constituents that can be used as raw materials in a wide range of industrial applications,

developing new applications for BSY, with an emphasis on technologies that are at or close to market readiness.

The above mentioned BSY constituents are Customized Yeast Extract (CYE), Yeast Cell Wall (YCW), Partially Autolysed Yeast (PAY) and bioactive peptides.



EXPECTED RESULTS

With this project we first of all optimize and scale up the processes to obtain different valuable products streams from BSY.

In a second phase, VLPbio and AB InBev aim to demonstrate and validate the use of CYE and YCW in their production processes.

Finally, the project is expected to obtain an industrializable technology package to be implemented in commercial breweries and to explore new partnerships to valorize these interesting constituents in other industries, such as the food and cosmetic industry for B2B relations.



IMPLEMENTATION

INSTALLATION OF A MICROBREWERY

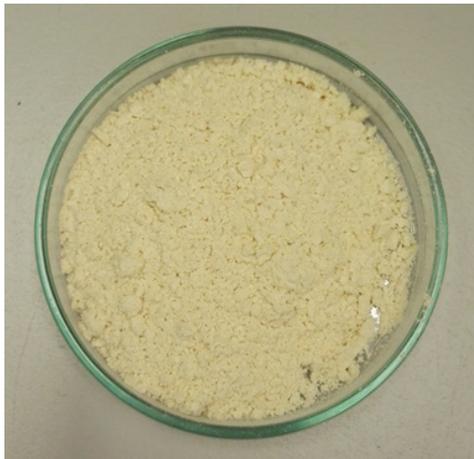
In May 2018, the final phase of the installation of the microbrewery plant took place at BDi Biotechnology facilities and the Site Acceptance Test (SAT) was successfully completed on June 4th. With a microbrewery at the facilities of BDi Biotechnology, it is possible to produce BSY on site allowing a greener production by reducing CO₂ emissions caused by the transport of BSY from the closest AB InBev brewery (600 km).

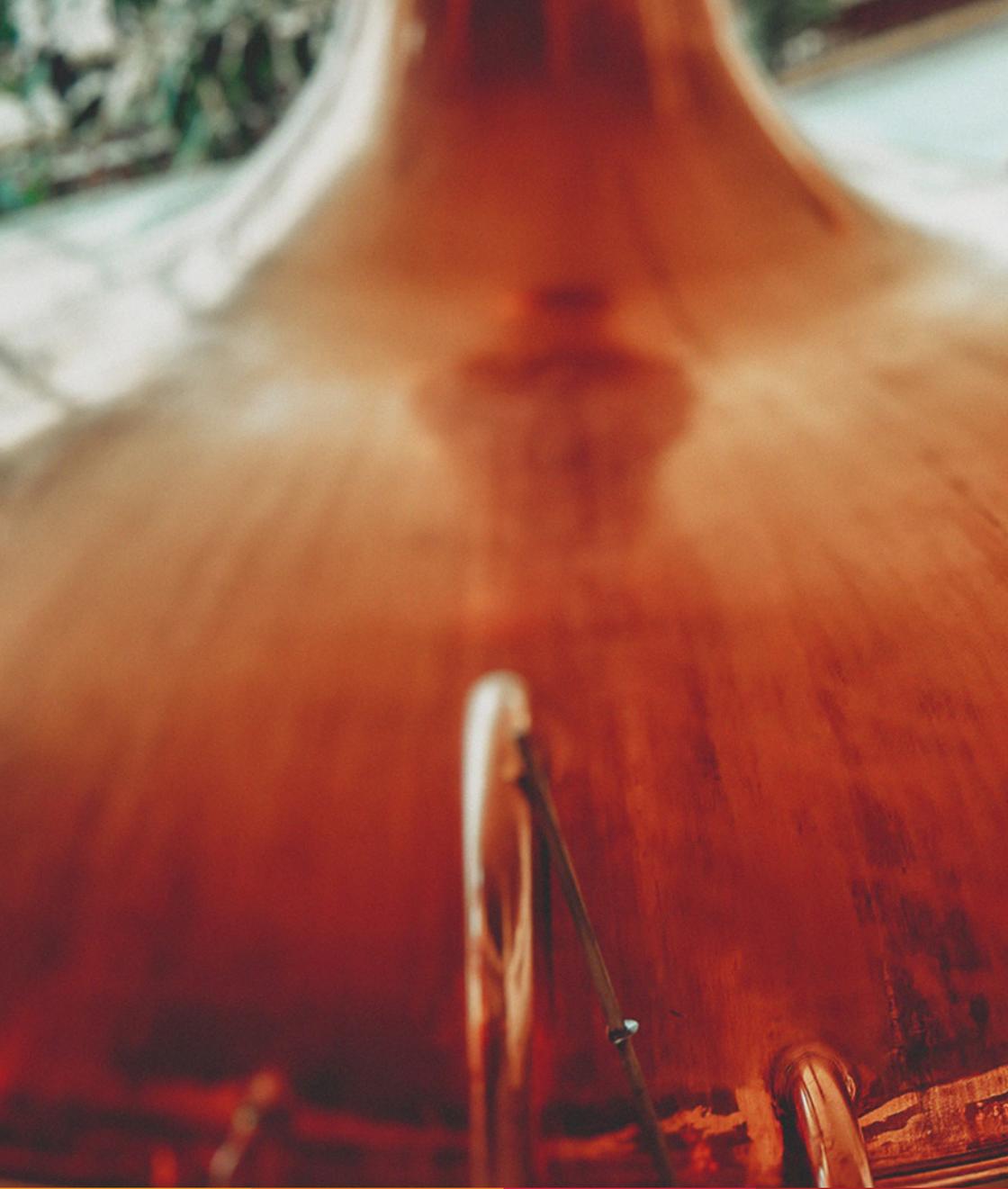


Production of Yeast Extract: scale-up to demonstration scale

After successful optimization of the extraction process to convert BSY into CYE, YCW and PAY at small scale, in January 2018 BDi Biotechnology started with the scale-up of this technology to semi-industrial scale. During a 6 months scale-up period, several production batches were completed, in order to obtain YE in the most optimal conditions taking into account both the quality as well as the quantity of the final product.

In June 2018, the BSY valorization technology for the production of the different interesting constituents (YE, YCW and PAY) derived from the BSY was validated. The results from the demonstration allowed to verify both the technical and economic feasibility of the technology as well as the excellent environmental and energy performance.





Coordinating beneficiary

BDi Biotechnology (Valladolid, Spain)
ehernandez@bdiotech.com



Associated beneficiary

AB InBev nv/sa (Leuven, Belgium)
jorge.gil-martinez@ab-inbev.com



Associated beneficiary

VLPbio (Valladolid, Spain)
emilio@vlpbio.com