

***Yarrowia lipolytica* as a Sustainable Microbial Platform for Circular added value Compounds Production**

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Yarrowia lipolytica is among the most studied oleaginous yeasts. Out of 600 identified yeast species, only 30 show this feature and *Y. lipolytica*, due to its non-pathogenicity and its dimorphisms, is the most studied non-conventional yeast.^[1] This yeast is naturally able to accumulate lipids to levels exceeding 50% of CDW^[2] using different compounds as carbon and energy sources. Waste cooking oils (WCO) refers to oils and fats used for cooking or for the storing of food substances at the commercial, industrial or household levels. In China and Europe their annual production is approximately 500 million tons and 4 million tons, respectively.^[3] If not collected, WCO can clog the sewage system creating the so-called “fatbergs”. Due to the environmental issues associated with WCO, its valorization needs to be of utmost importance. WCO have been thoroughly studied for the (bio-)chemical production of fatty acid methyl esters (FAME) and hydrogenated vegetable oil (HVO) which are known as biodiesel. However, this feedstock was shown to be used as ingredient in fermentation media for the production of valuable compounds.^[4] In this study, we report the use of WCO as feedstock for the development of a sustainable platform using the non-conventional yeast for the production of different compounds such as lipases, industrially-relevant sugars and intracellular lipids.

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[2] A. Beopoulos, Z. Mrozova, F. Thevenieau, M.T. Le Dall, I. Hapala, S. Papanikolaou, T. Chardot, J.M. Nicaud, *Appl. Environ. Microbiol.* (2008) 74(24), 7779-89.

[3] European Biomass Industry Association (2021)

[4] M. Lopes, S.M. Miranda, J.M. Alves, A.S. Pereira, I. Belo, *Eur. J. Lipid Sci. Technol. Eur. J. Lipid Sci. Technol.* (2019) 121, 1800188.