

Enzymatic hydrolysis of *Camelina* meal for carotenoids production in oleaginous yeasts

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Biorefineries are key players in bioeconomy scenario, but their sustainability is strongly related to the feedstock origin. Therefore, biorefineries based on residual biomasses are increasingly of industrial interest, to overcome drawbacks of the use of edible resources. We focused our work on the exploitation of leftovers from *Camelina sativa* oil extraction; this biomass, called *Camelina* meal, is still rich in proteins and fibers, and, therefore, has applications in the feed industry. The project aims to exploit it for the production of carotenoids, high-value products used also in animal feed, by fermentation of *Camelina* meal-derived sugars with *Rhodospiridium toruloides*, a natural producer of carotenoids. The biomass was hydrolyzed by enzymes, rather than acid, to release sugars, with a more sustainable approach. Different percentages of *Camelina* meal, together with different enzyme cocktails, concentrations and combinations, were tested, to optimize the saccharification step. Then, the obtained sugar mixture was converted by *R. toruloides* into the desired product. The process was developed either as a Separated Hydrolysis and Fermentation or as a Simultaneous Saccharification and Fermentation, and the data were compared. This work paves the way for obtaining a *Camelina* meal enriched in carotenoids by microbial cell factories-based processes.

