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Poster 43. Engineered Ashbya gossypii for single-cell oil production from non-detoxified Eucalyptus bark hydrolysate

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Ashbya gossypii is a filamentous fungus industrially used for riboflavin production, a bioprocess in which downstream product recovery is facilitated by the ability of this fungus to undergo

autolysis during the late stationary phase of growth or at low temperature [1]. In addition to riboflavin, engineered A. gossypii strains are capable of producing other compounds of interest for the food and feed industry, among which Single-Cell Oils (SCOs) from media containing mixed formulations of detoxified corn-cob hydrolysate, sugarcane molasses or crude glycerol [2]. In this work, we further demonstrate the potential of engineered A. gossypii oleaginous strains [2] for SCO production from non-detoxified hydrolysate of Eucalyptus bark, an abundant residue from the pulp and paper industry [3]. Strain performance was first studied in synthetic media mimicking the composition of the non-detoxified hydrolysate, containing the major inhibitors that could hinder growth. SCO production by the best performing strain was then characterized using different nitrogen and micronutrient sources in synthetic and real non-detoxified hydrolysate. The impact of cell lysis onset on the physiology of the strains and on the productivity of the process was studied with the aim of enhancing SCO production in non-detoxified Eucalyptus bark hydrolysate.

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