

Título: SCREENING FOR 2G ETHANOL PRODUCTION BY YEASTS OF THE GENUS MEYEROZYMA

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Abstract:

Ethanol production for biofuel, as well as other processes based on the use of renewable resources, has gained prominence in recent decades. In Brazil, the processing of sugarcane for bioethanol production has rendering hugh amounts of bagasse (SB) which, after proper preparation, can be used for the production of the 2G (second generation) ethanol. Some fermentable sugars as D-xylose and L-arabinose resulting from the hydrolysis of the complex polymers xylan and pectin, respectively, are produced during the pretreatment of SB. The fermentation of these pentoses for the production of ethanol is limited to a few numbers of microorganisms, mainly yeasts. Thus, the aim of this study was to assess the ability of 40 yeasts of the genus *Meyerozyma* to produce ethanol from D-xylose and L-arabinose. All the strains were previously checked for the capacity of growing using D-xylose and L-arabinose as the only carbon source. To assess the ability to produce ethanol during the growth, the strains were previously starved in 0.67% YNB medium containing 0.1% glucose for three days. After this period, the strains were seeded into 0.67% YNB containing 2% of the sugar tested, using the pour platemethod in which the yeast *Candida silvae* BR3-3BY was used as indicator of ethanol production. *C. silvae* BR3-3BY may grow using ethanol as carbon source but is unable to assimilate D-xylose and L-arabinose. No ethanol production was observed from L-arabinose and only two strains, *Meyerozyma caribbica* TO 687 and TO 795 showed presumptive positive results for ethanol production from D-xylose. Gas chromatography with head-space injection confirmed the production of ethanol by strain TO 795 but not for strain TO 687, although it has consumed 49% of the available xylose in the medium after 72 hours. The yield of ethanol production by strain TO 795 was 0.46 gp / gs after 24 hours, which was considered satisfactory in comparison with *Scheffersomyces shehatae* (syn. *Candida shehatae*) which is the preferred choice for this conversion and may yield 0.50 gp / gs. Further, there are few reports of ethanol production from D-xylose by yeasts of the genus *Meyerozyma*, and these reports refer only to *Meyerozyma guilliermondii* species. Thus, this study presents a new yeast strain able for the production of ethanol from D-xylose.

Keywords: Yeasts; Pentose; Ethanol production;

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