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Xylose assimilating yeasts and use of sugar from lignocellulosic biomass

Eleni Gomes, Diego Alves Monteiro, Maurício Boscolo and Roberto da Silva Ibilce Unesp – Sao Paulo State University, Brazil

The hydrolysis of polysaccharides from lignocellulosic biomass releases high quantity of pentoses, when fermented to ethanol could be a complement obtained by fermentation of glucose from cellulose saccharification (2G ethanol). Moreover, the use of pentoses as a substrate for obtaining value-added bioproducts is an alternative to ethanol. This work proposes the xylose assimilating yeast isolation focused on metabolites generated from the use of xylose as carbon source. Among the isolated strains *Pichia kluyveri* G1.1; *Hanceniaspora* sp. G4.1; *Hanceniaspora* sp. G7.1; Candida oleophila G10.1; *Metschnikowia koreensis* G18 were selected based on their good assimilation of xylose. The *Hanceniaspora* sp. G4.1, *Hanceniaspora* sp. G7.1 and C. oleophila G10.1 consumed 100% of xylose from the culture medium in 120 h. *Mucilaginibacter koreensis* G18 consumed approximately 70% in 96 h and *P. kluyveri* G1.1 was the strain that presented the lowest xylose consumption rate (50% in 120 h). Qualitative evaluation of the organic acids secreted by strains in these cultures revealed the presence of oxalic, citric, maleic, tartaric, malic, pyruvic, lactic, fumaric, acetic, propionic, isobutyric, and butyric acid. In cultivation using culture media with different initial pH values and concentrations of xylose it was observed that the factors which influence the production of organic acids by *M. koreensis* G18, however, were not significant for other yeasts.



Recent Publications:

- 1. Zanchettaa A et al. (2018) Temperature dependent cellulase adsorption on lignin from sugarcane bagasse. Bioresource Technology. 252:143-149.
- 2. Martins G M et al. (2018) The isolation of pentose-assimilating yeasts and their xylose fermentation potential. BJM. 49(1):162-168.
- 3. Coelho A et al. (2017) Mixed metal oxides from sucrose and cornstarch templated hydrotalcite-like LDHs as catalysts for ethyl biodiesel synthesis. Applied Catalysis A: General. 532:32-39.
- 4. Moretti M M D S et al. (2016) Effect of pretreatment and enzymatic hydrolysis on the physical-chemical composition and morphologic structure of sugarcane bagasse and sugarcane straw. Bioresource Technology 219:773-777.
- 5. De Souza Gomes et al. (2016) Engineering increased thermostability in the GH-10 endo-1,4-endoglucanase;-xylanase from *Thermoascus aurantiacus* CBMAI 756. International Journal of Biological Macromolecules. 93(PtA):20 -26.

Biography

Eleni Gomes is a Professor at Ibilce Unesp – Sao Paulo State University, Brazil. She has her expertise in industrial microbiology and has been working with prospecting microorganisms for bioenergy application. She has her experience in research with cellulases, xylanase end pectinase production by thermophilic fungi and sugar obtainment from lignocellulosic biomass for bioethanol and byproducts production.

eleni@ibilce.unesp.br