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## Bioconversion of lignocellulosic materials to ethanol and xylitol by *Candida boidinii* UFMG14

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Brazilian technology of ethanol production from sugarcane is one of the most efficient and well-established of the world and the use of lower cost substrates, such as lignocellulosic byproducts, could result in a more competitive renewable fuel. In this context, the palm press cake generated by biodiesel production process may be a new feedstock for second-generation ethanol production. Our group has been study the bioconversion process of D-xylose to ethanol and xylitol by yeast isolated from the macaúba (*Acrocomia aculeata*) fruit. Macaúba press cake provided from biodiesel production process was used for hemicellulosic hydrolysates obtaining using acid, hydrothermal and hydrothermal followed by acid pretreatments, which were evaluated and analyzed for sugars, acids and inhibitory compounds. The hydrolysate obtained by acid treatment revealed higher sugar and lower furfural, 5-hydroxymethylfurfural and acetic acid contents. This material was used to study the effect of hydrolysate supplementation and concentration in the *Candida boidinii* UFMG14 fermentation, while the solid biomass was used to obtain a cellulosic hydrolysate and ferment (SSF) in a mixture experiment. The supplemented hydrolysate containing D-xylose 25 g/L showed the highest ethanol production (12 g/L),  $Y_{E/S}$  (0.40 g/g) and  $Q_E$  (0.33 g/Lh) compared to hemicellulose hydrolysates supplemented with 10 g/L. The mixture experiment indicated a higher ethanol production when 100% cellulosic hydrolysate was used for fermentation, compared with hydrolysates combination. This research represents the first step in integrating production technologies of the two most important Brazilian renewable energy matrices, ethanol and biodiesel.

### Biography

Daniel Bonoto Gonçalves did a BS in Biochemistry from Federal University of Viçosa, Master in Agricultural Microbiology from the same university and PhD in Microbiology by Federal University of Minas Gerais. He has experience in Industrial Microbiology and Fermentation with emphasis on Optimization of Fermentation Processes and Production of Industrial Enzymes; in Genetics, with emphasis on Molecular Genetics of Filamentous Fungi. He is currently Professor at the Federal University of Sao Joao del Rei, Campus Midwest Dona Lindu, and Deputy-Coordinator of the Graduate Program in Biotechnology.

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