

Production of Cellulases and Hemicellulases by *Aspergillus glaucus* LTB from Different Lignocellulosic Biomasses

Rodrigues, R. S., Ladeira, R. I. S., Queiroz, L. N., Caneschi, A. L., Tormen, L.,
Guimarães, V.M, Tavares, S. R.

Departamento de Bioquímica e Biologia Molecular, Universidade Federal de
Viçosa, Minas Gerais, Brazil.

Growing concerns over the environmental impact of fossil fuels has led to the extensive research of bioethanol from lignocellulosics and especially the possibility to use lignocellulolytic enzymes to perform hydrolysis of the biomass. Like this, in recent years, the interest in cellulases and hemicellulases has increased. In this work, the species *Aspergillus glaucus* LTB was isolated and tested in relation to ability of FPases, endoglucanases, cellobiases, α -galactosidases, β -xylosidases, α -arabinofuranosidase and xylanases production, when cultivated in liquid medium (0,2% yeast extract, 0,3% NaNO₃, 0,05% KCl, 0,05% MgSO₄.7H₂O, 0,01% FeSO₄.7H₂O and 0,1% K₂HPO₄), containing two different lignocellulosic biomasses: silvergrass and sugarcane bagasse, as carbon sources. The cultures were incubated at 28°C and 180 rpm. Daily aliquots were analyzed in relation to the enzymatic activity for 15 days. When the fungus was cultivated in the medium containing silvergrass, there was a considerable production of xylanase (3.68 U/mL) and FPase (0.4 U/mL). However, in this medium there was not production of the α -arabinofuranosidase and cellobiase, and was detected low enzymatic activities of the other analyzed enzymes. Already, in the medium with sugarcane bagasse, the enzymatic activities of analyzed cellulases and hemicellulases were still smaller, and the maximum activity of xylanase was 0.41 U/mL. In this medium there was not production of the enzymes α -arabinofuranosidase and α -galactosidase. Therefore, it can be concluded that the silvergrass used as carbon source, in comparison with the sugarcane bagasse, induced higher cellulases and hemicellulases production for the fungus *Aspergillus glaucus* LTB.

Support financial: FAPEMIG.

Key words: Bioethanol, sugarcane bagasse, silvergrass, cellulases and hemicellulases.