INDUSTRIAL INTEREST ENZYME PRODUCTION BY *Rhizomucor pusillus* UNDER SOLID STATE FERMENTATION

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Introduction. Actually great portions available of protease in the market derive from *Bacillus*, and the most cellulase procedures studied at industrial scale use *Trichoderma reesei* strains (1). The employment of thermostable enzymes to carry out hydrolysis at higher temperatures is generally advantageous because it increases the speed of reaction and avoids microbial contamination contributing to increased technical and economical viability of the process (2).
The aim of this work was to evaluate the extracellular protease and cellulase production by the thermophilic strain *Rhizomucor pusillus* using corn cob as support-substrate.

Methodology. The extracellular protease and cellulase production ability of *Rh*. *pusillus* (DIQ-UAdeC collection) was analyzed qualitatively by a plate-screening method (PSM) and quantitatively in solid state fermentation (SSF) using corn con (CC) as support-substrate. Endoglucanase activity was measured according to Cunha *et al*., (3). One unit of cellulase activity was defined as the amount of enzyme required to liberate 1 µmol of glucose/mL under experimental conditions. Proteolytic activity was measured using a modified Kunitz method (4), soluble peptide dosage was achieved by following the method of Lowry *et al*., (5). One unit of protease activity was defined as the amount of enzyme required to liberate 1 µmol of tyrosine/mL under experimental conditions.

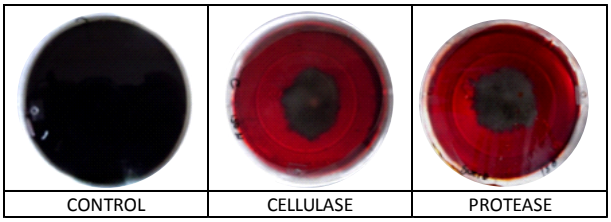

Figure 1 Extracellular hydrolysis halos

Results. Extracellular enzymatic activity was evaluated by a plate-screening method (PSM) (Figure 1), where the strain was capable to show the characteristic hydrolysis halos either for cellulase or protease activity. This result permits to set the fermentation for the quantitative analysis of both enzymes. Fermentation results in Figure 2 show that the highest cellulase activity (235 U/mL) was at 96 h, without difference statistical significance with 72 and 120 h. Protease activity (367 U/mL) was at 72 h.

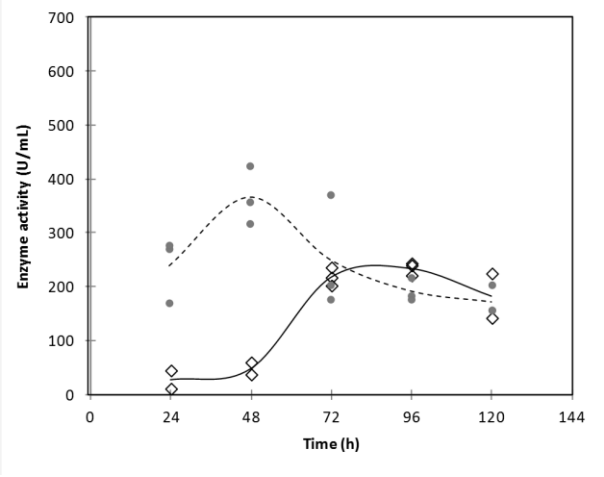

Figure 2 Cellulase (-----) and protease (- - -) activity by *Rhizomucor pusillus* in SSF at 50 °C.

Conclusion. Production of enzymes such as cellulase and protease by thermophilic fungi, results in a proper option for the generation of thermostable enzymes which are growing on demand at the industrial market. Besides, the use of agroindustrial wastes in the SSF allows generating sustainable processes.

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