Leidy Yanira Rache et al., J Biotechnol Biomater 2017, 7:6 (Suppl)
DOI: 10.4172/2155-952X-C1-086

Cellulase and xylanase activities of *Xanthomonas axonopodis* pv. *manihotis (Xam)* strains collected from different regions of Colombia

Leidy Yanira Rache, Adriana Bernal Giraldo and **Silvia Restrepo**
Universidad de los Andes, Colombia

Statement of the problem: Microorganisms are an important source of plant cell wall-degrading enzymes. This is especially true for plant pathogenic bacteria because the production of plant cell wall-degrading enzymes is practically a prerequisite for pathogenesis. Recent studies characterized the activity of the enzymes produced by different bacteria, and their utilization in industrial processes, including the degradation of lignocellulosic biomass for biofuel production. Currently, the sources to obtain biofuel are not renewable, and the diversity of enzymes produced by native endogenous bacteria is becoming more importance. Thus, we propose to analyze the carboxymethyl cellulase (CMCe) and xylanase activities of the cassava pathogen, *Xanthomonas axonopodis* pv. *manihotis (Xam)* strains collected from different regions of cassava production in Colombia.

Methodology & Theoretical Orientation: We performed a screening of the enzymatic activity of 660 *Xam* strains maintained at the Natural History museum collection of the Universidad de Los Andes. The hydrolytic activity was determined using 0.2% Congo red and identifying clear halos. Strains showing statistically significant differences and the highest coefficient estimates were selected and individually analyzed for their hydrolytic activity.

Findings: A total of 34 out of 660 *Xam* strains showed significant differences, and the higher coefficient estimate of CMCe activity. The highest ranges of carboxymethyl cellulose degradation ranged from 6.269 to 4.992 cm2 in area, and the lowest between 1,71 and 0.445 cm2. A total of 46 out of 660 Xam strains showed significant differences and highest coefficient estimates of the xylanase activity. The highest ranges of Xylan degradation ranged from 0.3375 to 0.261 cm^2 in area, and the lowest between 0.2096 to 0.2 cm2. Differences in *Xam* hydrolytic activity were analyzed and related at the molecular level.

Conclusion & Significance: This study is an important approach to increase the knowledge on plant hydrolytic activities of *Xam* and to discuss the possible use of these enzymes in biotechnological processes

Biography

Leidy Yanira Rache has developed her studies in different areas of knowledge, such as in vitro plant tissue culture of several fruits species, gene flow in GM cotton, and pesticide degrading capabilities of bacteria. Currently, she is studying the population genetic diversity and cellulolytic activity of *Xanthomonas axonopodis* pv. *manihotis* from different regions in Colombia. The aims of the study are to propose control strategies to the blight caused by the bacteria, and to promote research for knowledge of not only native *Xam* species but also others native pathogenic bacteria in Colombia.

ly.rache10@uniandes.edu.co

Notes: