

Title: Evaluation of pectin lyase synthesis from *Aspergillus* sp.

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Abstract:

Pectinolytic enzymes are responsible for the degradation of pectin, a structural constituent of cell walls in plants. A great amount of microorganisms are able to produce pectinolytic enzymes that is predominantly from filamentous fungi, which are the most applied on large scale industry of those enzymes. In most case, *Aspergillus niger* is employed for the production, since it is classified as Generally Recognized as Safe (GRAS) by Food and Drug Administration (FDA). The main industrial utilization of pectinase consists of juice production, wines and processed foods. Those enzymes may be added to the process, aiming the reduction of viscosity and turbidity, and the increasing the extraction and clarification. Therefore, the project aims to evaluate the best growing conditions to fungus *Aspergillus* sp. for the pectinase production. For that, culture medium were prepared containing 0,5g of MgSO₄, 0,5 of KH₂PO₄, 0,5g of CaCl₂, citrus pectin with variations of amount according to the percentage being analyzed, in 50 mL of distilled water. The inoculation in liquid based was made with 250µL of a spore suspension from a fungal culture on PDA (Potato, Dextrose, Agar). The growth was carried out in 250 mL Erlenmeyers flasks, at 30°C for 7 days. Completed the growing time, the growth was filtrated by vacuum filtration and the supernatant was used as a font of enzymes. The determination of enzymatic activity was made by spectroscopy, measuring the range of absorbance (235 nm) by the enzyme action on a solution of citrus pectin (1%) and citrate buffer (0,1M, pH 5,0) for 10 minutes, at 30°C. The concentration of protein was measured by the Bradford method. The evaluation criteria for optimization of pectinase production were the scraping method of spores for the inoculation in liquid based, effects of agitation during the growth and the variation of pectin concentration (2-6%). The parameters that reached the best activity values were conserved on the followings growth. Thus it was determined that the highest levels of activity are achieved when the citrus pectin culture medium presents concentration of 6%, kept without agitation and scraping made inoculation loop. The determination of the optimal parameters is extremely important because it allows the accomplishment of future studies using the fungus *Aspergillus* sp. optimizing its growing for enzymatic synthesis.

Keywords: Pectin lyase, *Aspergillus* sp., enzymes.

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