

CAPACITY OF FUNGAL XYLANASE INDUCTION BY INDUSTRIAL EFFLUENT

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Due to industrial processes and the increased demand for manufactured products it is noticed the importance of waste management to avoid environmental impacts. In the last decades, the pulp industry showed an increase in the generation of effluents characteristically pollutants and bioaccumulative because there is a predominant presence of chlorine, compound that is used in large quantities for chemical bleaching of cellulose pulp. This compound is harmful to the environment, justifying the need for alternative methods to chemical bleaching as the biotechnological processes using microbial enzymes. The xylanase is the enzyme with higher performance for the biobleaching, act in the hydrolysis of xylan connections of plant cell walls, easing the action of the chlorine in the delignification of cellulose pulp, reducing considerably the amount of this compound in the process and consequently decreasing the organochlorine in the effluents. Therefore, the aim of this study is to analyze the capacity of a liquid alkaline effluent in inducing the production of fungal xylanase. This pilot production was realized with effluent collected in second bleaching stage of a pulp industry in São Paulo state by submerged liquid fermentation with *Aspergillus niger* (IOC/CCFF 3998) using culture medium and culture conditions described in the literature (incubation time, agitation and temperature), with the variation of effluent concentrations in decreasing of the concentration of xylan inductor, that has considerable commercial value. The evaluation was measured by determining the protein concentration by the Bradford method, determination of xylanase activity and specific activity from different effluent concentrations (0 to 100%). The concentration of effluent of the higher performance was of 50% in relation to the culture medium that showed specific activity of 29 U/mg. Thus, it was observed that effluent was able to induce xylanase production in different concentrations. This initial data was used subsequently in an optimization production. The use of industrial waste and/or effluents in the production of enzymes can contribute to the reduction the discharge in the environment, minimizing the ecological problems, favoring the sustainable development.

Key-Words: xylanase, *Aspergillus niger*, effluents industry

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