PRODUCTION AND PARTIAL CHARACTERIZATION OF XYLANASE FROM Bacillus sp. SMIA-2 GROW ON SUGAR CANE BAGASSE AND CORN STEEP LIQUOR


This work was carried out with the objective to evaluate xylanase (endo-β-1,4- xylanase; EC 3.2.1.8) production by thermophilic Bacillus sp. SMIA-2 in submerged fermentation using sugar cane bagasse (SCB) as carbon source, and corn steep liquor (CSL) as nitrogen source. In addition, it was evaluate some biochemical properties of these enzymes. The micro-organism secreted xylanase in a growth medium containing SCB 5 g.mL⁻¹ and CSL 5 g.mL⁻¹. In such conditions, the xylanase activity and the cellular grow ranges 0.51 U.mL⁻¹ and 1.5x10⁹ UFC.mL⁻¹ in 72 hours’ fermentation at 50ºC. Bacillus sp. SMIA-2 also secreted xylanase when cultivated in liquid culture containing sugar cane bagasse treated with alkali and acid (0.36 U.mL⁻¹) and sugar cane bagasse treated with alkali (0.22 U.mL⁻¹), but the higher level of xylanase was obtained in liquid culture containing SCB untreated. The enzyme was most active at 70ºC and showed more than 70% of stability when incubated at 40ºC for 3 hour while at 70ºC, about 68% of its maximum activity was lost. At 90ºC the enzyme was completely inactivated. In conclusion, Bacillus sp. SMIA-2 was able to grow and produce good levels of xylanase using solely sugar cane bagasse and corn steep liquor as low-cost substrates, making this strain potentially feasible for biotechnological applications in different areas.