
ABSTRACT

The present research work is about production of the fungal xylanases under solid state fermentation. In this perspective, 50 different fungi were being isolated from agricultural soil samples taken from various locations of Lahore and Sialkot. These fungal strains were screened to check that which strain shows maximum xylanase enzyme production. Among these strains, XY13 strain gave highest enzyme activity (3.14 ± 0.03 U/ml). This strain was identified as *A. oryzae* after microscopic and macroscopic studies. Eight different agro-residues were used as substrate i.e rice bran, rice straw, wheat straw, wheat bran, saw dust, corncob, banana peel and sugarcane baggass for the biosynthesis of xylanase. The strain XY13 gave optimum production (3.4 ± 0.50 U/ml, 0.18 mg/ml) when 10 g rice straw was used for 72 h. For the optimization of the nutrient requirements, seven different diluents were used at different pH (4-7) and it was observed that diluent D2 containing was found to be the best (3.6 ± 0.15 U/ml, 0.25mg/ml) at pH 5.5 among all other diluents. Different incubation time (24-120 hrs) and temperature (25- 37°C) were studied and maximum enzyme yield (4.15 ± 0.076 U/ml, 0.3mg/ml) was obtained when incubated at 35°C for 96 hrs. Different concentrations (5- 20 g) of the optimized substrate and different inoculum sizes (1- 3 ml) were used and 12.5 g gave maximum production (4.37 ± 0.06 U/ml, 0.32mg/ml) using 2 ml of inoculum suspension. So, maximum activity was found (4.5 ± 0.08 U/ml, 0.35 mg/ml) when yeast extract and NaNO_3 was optimized as N sources. Protein was purified at 70% ammonium sulphate precipitation and pure enzyme retained its residual activity (70%) at 50°C and 59% at pH 5.0. after 1 h of incubation.