ABSTRACT

The present investigation deals with the production of thermotolerant acetylxylan esterase (AXE) by *Aspergillus nidulans* IMPP-0785 and effects of various mineral ions, detergents and polyalcohols on activity of enzyme. The batch culture experiments were carried out using wheat straw as a raw substrate under solid state fermentation (SSF) in 250 ml Erlenmeyer flasks. Cultural conditions including 15 g wheat straw as solid substrate, time of incubation (72 h), size of inoculum (10%, v/v), maltose as additional carbon source (1%) and urea as additional nitrogen source (0.75%) were optimized for the improved production of AXE (65 U/g). Effect of mineral ions (Cu^{2+}, Fe^{2+}, Ag^{2+}, Zn^{2+}, Al^{2+}, Ca^{2+}) were studied. Presence of 0.5mM Fe^{2+} showed best results in terms of AXE activity (84 U/g) as compared to other mineral ions, but 1.5 mM of Fe^{2+} almost completely abolished AXE activity (9 U/g). Four different detergents (SDS, Triton X-100, PEG and CHAPS) were used as additives to investigate effect of detergent on AXE activity. Triton X-100 (1%) showed an increase in AXE activity (110 U/g) but higher concentration of Triton X-100 showed negative effects. Among various polyalcohols (glycerol, manitol, arabitol, sorbitol), glycerol gave best results when present 1% in reaction mixture (99 U/g). AXE activity was found to be maximal at 50°C (128 U/g).