

Application of RSM technology for purification of α -amylase produced by immobilized *Bacillus licheniformis* (1483)

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Living cells of *Bacillus licheniformis* (MTCC-1483) were entrapped in calcium alginate beads for the α -amylase production. There was maximum production after 24 hrs at pH 6.5 when 1×10^{12} cells /ml immobilized in 2 % sodium alginate was inoculated in the production medium containing 2% starch and 1.5% calcium carbonate as inducer. Response surface methodology (RSM) in conjunction with central composite design (CCD) was performed to optimize the amylase purification parameters by ethanol extraction methods. Maximum purification fold (1.6) and % recovery (77%) was achieved by using 90% acetone, pH 4, temp. 4°C and retention time of 1 hr. To increase the purification level further extraction was carried out by ethanol Solvent using RSM. The maximum purification fold (13) and % recovery (23%) was achieved by using 10% ethanol, pH 6.5, temp. 4°C and retention time of 12 hrs. The purified cellulase has molecular mass of 32.5 kDa, and optimal pH and temperature at 6.5 and 40°C , respectively. The purified cellulase activity was inhibited by Na^{+1} , Cl^{-1} Mg^{2+} Tween 80 and EDTA. Amylase extracted by ammonium sulphate precipitation has specific activity 24.68 IU/mg of protein, optimum pH 7 and temperature 60°C , K_m 0.009 mg/ml and V_{max} 0.5 IU/ml/minute.

Biography

Jagdish Singh has completed his Ph.D. at the age of 28 years from Punjabi University Patiala Punjab India. Presently he is the head of Department in The Biotechnology Department In the, a premier organization Mata Gujri college Fatehgarh Sahib Punjab. He has published 08 papers in reputed journals and serving as member of different board of studies. He is running two research projects granted by central government Funding agencies. He has guided more than 75 postgraduate research projects.

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