

Purification and characterization of uricase enzyme isolated from *Bacillus spp.*

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Bacillus genus comprises variety of species that are diverse, commercially useful and widely distributed in nature. They produce a large number of enzymes that plays an important role in the medical, pharmaceutical, textile, leather, paper and food industry. The common example is uricase or urate oxidase enzyme that plays a key role in medical field as a therapeutic drug. This enzyme is absent in higher primates and can be produced from *Bacillus* spp. In this study, bacteria isolated and characterized from soil of 5 different locations in Lahore. A broth was prepared for the uricase enzyme production with different chemicals like KH2PO4 (0.2%), MgSO4.7H2O (0.1%), K2HPO4 (0.2%), NaCl (0.01%), CaCl2 (0.01%) and uric acid (0.5%). *Bacillus* spp. produces extracellular enzyme and enzyme was assayed from extracellular medium (17.87 µmol/mL/min). Nutritional and physical parameters were optimized for maximum production of uricase. Best results were obtained when 0.5% uric acid used as an inducer, sucrose as a carbon source, peptone as a nitrogen source at pH 8 on 37ºC for 36 hours. Ammonium sulphate precipitation was used for partial purification of uricase enzyme resulted in 4.67 fold purification with enhancement of specific activity of 301.5 µmol/mL/min. The molecular weight of uricase is 35 kDa determined by SDS poly-acrylamide gel electrophoresis. Uricase showed maximum activity at 37ºC and pH 8. Kinetic characterization of uricase revealed uric acid as the highly specific substrate for the enzyme with Km value of 0.052 mg/mL and Vmax of purified uricase was 27.7 µmol/mL/min.

Biography

Saad Sattar has completed his M.phil in Microbiology from GC University Lahore, Pakistan. He has worked as a lab scientist in clinical pathology labs of Shaukat Khanum Memorial Cancer Hospital And Doctors Hospital Lahore for more than 2 years. Now working as a Senior Research officer in Abdus Salam Research Forum at Nusrat Jahan College, Rabwah, Pakistan.

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