Isolation of Streptomyces sp. from soil and its medium optimization for microbial transglutaminase production by box-behnken design

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Transglutaminase (E.C. 2.3.2.13) are a family of enzymes that catalyze the formation of a covalent bond between a free amine groups. They are widely used in food industries and their demand rises daily. Though they are available in mammalian tissues, fish and plants, the complex separation and purification process led to the search of Microbial Transglutaminase (MTGase). Finding a new microbial source of transglutaminase and the study of the medium composition for MTGase production were the goals of this work. Six Different types of Actinomycetes like strains were isolated from soil sample and two of them named PG03 and PG06 were selected based on their ability to produce 23 mg/ml and 21 mg/ml MTGase enzyme respectively. Strain PG03 was chosen for further studies and it was found to be a Strpetomyces sp. In order to optimize the MTGase activity, modifications of the usual media composition described for enzyme production were tested. Strategies like screening experiment for the best carbon and nitrogen sources, Plackett-Burman method to elucidate the key ingredients in the media production and Response Surface Methodology to optimize the concentration of the key components were adopted. The experimental results were fitted to second order polynomial model at the 95 % confidence level. Under the proposed optimized conditions, the model predicted a transglutaminase yield of 21.7 mg/ml, very closely matching the experimental value of 24.1 mg/ml. The regression obtained.

Biography

Gopal Samy B has completed his M.Tech-Biotechnology at Sathyabama University, Chennai, M.Phil-Bioinformatics at PRIST University, Thanjavur and at present he is doing his Ph.D in Biotechnology at Anna University of Technology, Coimbatore, under the guidance of Dr. K. Jegatheesan. He is working as the Associate Professor in Biotechnology and an active member of the R & D Cell at St. Michael College of Engineering & Technology, Kalayarkoil. He has published more than 3 papers in reputed international and national journals and he is also the Associate member of Institute of Nanotechnology. He has also visited IBMBB, Colombo for an International Conference.

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