

Isolation of microbes for bioremediation of poultry waste and its medium optimization for L-Asparaginase production by central composite design

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The objective of this work was to find out a new microbial source for Asparaginase production and to optimize the media composition for that microbial asparaginase. Different strains were isolated from soil sample and two of them namely *Aspergillus niger* and *Erwinia caratavora* were selected based on their ability to produce 0.68 IU/ml and 1.08 IU/ml asparaginase enzyme respectively. The further study was continued using these two strains. In order to optimize the asparaginase activity, modifications were tested on the usual media composition described for enzyme production. The strategy adopted was: (1) Screening experiment for the best carbon & nitrogen sources; (2) Plackett-Burman method to elucidate the key ingredients in the media production and (3) Central Composite Design to optimize the concentration of the key components. The experimental results were fitted to second order polynomial model at the 95 % confidence level. Under the proposed optimized conditions for *Erwinia caratavora*, the model predicted an asparaginase yield of 0.542 IU/ml, being the highest as it gives experimentally 2.76 IU/ml. Similarly for *Aspergillus niger*, the model predicted an asparaginase activity of 1.604 IU/ml in accordance with the experimental value of 5.95 IU/ml. Then these strains were also checked for their enzyme production in Poultry waste, which shockingly shows an average of 45 % increase in enzyme activity than normal production media for both *Aspergillus niger* (1.01 IU/ml) & *Erwinia caratavora* (1.55 IU/ml). As a conclusion, these soil isolated strains may be used in bioremediation of poultry waste leading to the production of Asparaginase enzyme from the Poultry waste.

Biography

Sujitha has completed her B.Tech-Biotechnology at St. Michael College of Engineering & Technology, Kalayarkoil and worked as Assistant Professor in the department of Biotechnology in the same Institution. At present she is doing her M.Tech-Biotechnology at St. Michael College of Engineering & Technology itself affiliated to Anna University of Technology, Madurai. She is also an active researcher doing many research works under the guidance of Dr. K. Jegatheesan. She has organized and attended various National level Symposiums, Seminars and workshops.

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