

## Cloning & expression of an eukaryotic tyrosinase gene into a prokaryote for sea food waste management

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Tyrosinase (E.C. 1.14.18.1) is an enzyme that catalyses the oxidation of phenols such as tyrosine. Tyrosinases have been isolated from a wide variety of plants, animal and fungi species and they are diverse in terms of their structural properties and activation characteristics. In the present work, we have cloned & expressed the Tyrosinase gene from a eukaryote into a prokaryote and optimized the media composition for the recombinant prokaryote and checked its ability to degrade the sea food wastes. Various plant sources of tyrosinase enzyme and their tyrosinase content has been checked. Based on that four sources namely *Solanum tuberosum*, *Amorphophallus campanulatus*, *Agaricus bisporum* and *Dioscorea alata* have been identified as source for enzyme tyrosinase and its Michaelis-Menten parameters were determined using double reciprocal plot. The  $K_m$  value is higher for *Dioscorea alata* (2.5) comparing to the other three making it the source of enzyme for further study. The raw enzyme obtained has been purified using TCA precipitation and separated by SDS-PAGE. This purified enzyme has been sequenced using Mass Spectrometry and this amino acid sequence is used to find its complimentary DNA sequence. The gene is then constructed along with promoters to express in prokaryotes and the constructed gene was cloned into *Escherichia coli* & *Bacillus subtilis* and checked for its expression. In order to optimize the media for these recombinant strains, modifications were tested on the usual media composition Plackett-Burman Design and Central Composite Design. Then these strains were grown on Sea food waste and checked for their enzyme production, leading to its bioremediation. Thus sea food wastes can be used as a source for these recombinant strains for the production of L-DOPA, a product of the Tyrosinase activity, used as a drug for Alzheimer's disease.

### Biography

Gopal Samy 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 the Department of Biotechnology and an active member of the R & D Cell at St. Michael College of Engineering & Technology, Kalayarkoil. He has published more than 2 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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