## Isolation, screening and optimization of protease producing marine actinomycetes under submerged fermentation

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## ABSTRACT

Actinomycetes are gram positive unicellular bacteria with typical filamentous growth on solid media, which can produce various secondary metabolites including enzymes. Proteases are enzymes of ubiquitous nature which catalyze hydrolytic reactions resulting in breakdown of protein molecules into peptides and amino acids. Proteases have a long history of application in the food and detergent industries. The present study was to determine and isolate potential isolates of actinomycetes producing protease enzyme under submerged fermentation. A total of 48 isolates were obtained from four different marine samples in Visakhapatnam, Andhra Pradesh which were screened for antibacterial activity on starch casein agar medium and protease activity on protease agar media. Among the strains screened for antibacterial activity and enzyme production, B4 was found to be potent strain producing the enzyme protease and strain D1 showed potent antibacterial activity against *E.coli*. Protease activity was determined with bromocresol green indicator, resulting in zone of inhibition. The B4 isolate was subjected for submerged fermentation for the production of protease by optimizing the process parameters. The optimum conditions for the maximum production of protease were found to be at 30°C with a pH of 7 when incubated for 7 days with 7<sup>th</sup> day old culture and 4<sup>ml</sup> of the inoculum volume for protease and the addition of casein a good nitrogen source to the production medium has enhanced the enzyme activity to 77.56U/ml.

Keywords: Actinomycetes, Antibacterial activity, Protease, E.coli., Submerged fermentation.



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