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Screening of novel marine actinomycetes Streptomyces Fragilis g12 for production of protease enzyme

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Decrease in the rate of discovery of new compounds from terrestrial actinomycetes with an increase in the rate of re-isolation of know compounds and the rise of antibiotic resistance warrants a search for actinomycetes producing novel bioactive compounds in underexplored area and are potential targets for the search of novel actinomycetes. In the present study actinomycetes were isolated from marine sediments collected off the coast of Visakhapatnam and samples collected from Coringa mangrove forest, Kakinada, Andhra Pradesh. An isolate G12 from Coringa mangrove forest showed antibacterial activity against Escherichia coli, *Bacillus licheniformis* and *Rhizobium radiobacter*. In addition, the isolate G12 also exhibited protease producing capability. Fermentation condition viz., incubation time incubation temperature inoculum age, initial pH, carbon and nitrogen sources were optimized for maximizing the antibacterial metabolite and protease production. Physiological and biochemical characteristics of the isolate were studied by the conventional method and identified *Streptomyces fragilis* G12 by the Microbial Type Culture Collection (MTCC), Institute of Microbial Technology, Chandigarh. The optimized conditions for protease production were; incubation time-7 days; Incubation Temperature- 320C; inoculum age- 6 days; initial pH- 8.0; carbon source- Maltose; nitrogen source- beef extract. . With the optimized conditions employed the protease production was 60.7U/mL.This study shows that the isolated mangrove *actinomycetes Streptomyces* fragilis G12 has strong antibacterial potential along with moderate protease activity and is a potential candidate for industrial use.

Production of extracellular beta-galactosidase using filamentous fungal isolate under solid state fermentation

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Beta-galactosidase is a hydrolyzing enzyme mainly used in dairy industry with many important applications mainly include production of lactose free milk, whey processing reduces the whey environment pollution along with production of marketable products and also production of medically useful probiotics like GO's. Fungal beta-galactosidase is mainly used for the hydrolysis of acid whey, produce useful products and reduce whey pollution, a very considerable problem in cheese industry.

In the present study five substrates such as wheat bran, corn powder, dry raw tomato powder, bengal gram sprouts and green gram husk were tested for their potential in the production of beta-galactosidase using various fungal strains Aspergillus niger NCIM 616, Aspergillus oryzae NCIM 1212 and fungal isolate CG, isolate CW, isolate CB, and isolate BB under solid state fermentation. The maximum extracellular beta-galactosidase 6.713U/mL was achieved with incubation time 72h, inoculum volume 1%(v/v), temperature 30oC, inoculum age 7th day, mineral salt(MnSO4 7H2O) 1%, , pH 5.0 and initial moisture content 40%(v/w) using fungal isolate CG from spoiled curd with a mixture of bengal gram sprouts and corn powder as substrate.

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