

Chitinase production from *Paenibacillus sp.* BISR-047 utilizing seafood waste as substrate under solid-state fermentation

Saavi Pradhan

Banasthali University, India

Chitinases have huge potential applications and biological value in industries; they are used in generating single cell proteins, sweeteners, insecticides, antifungal drugs, anti cancer agents, biopesticides, food processing agents, degrading agents for sea waste etc. Chitinases are used for the conversion of chitin a polysaccharide into monomers. Extraction of chitin involves two steps, demineralisation and deproteinisation, which can be conducted by two methods, chemical or biological. The chemical method requires the use of acids and bases, while the biological method involves microorganisms.

Solid-state fermentation (SSF) is a low-cost fermentation technology, particularly suitable for the needs of developing countries. This bioconversion technology of chitinous materials through chitinolytic process is an alternative waste treatment that not only solves environmental problems but also decreases the production costs of microbial chitinases. Therefore, efforts were made in the present study to utilize seafood waste for chitinase production under SSF. A novel thermo-tolerant bacterium *Paenibacillus sp.* BISR-047, previously isolated from the Great Indian Desert soils, was used and various process parameters were studied. We obtained 346 IU/ml of chitinase production in a medium containing crab and prawn waste (5:2; waste: water), 1.5 g/kg yeast extract (w/w), 0.5 g/kg NaCl (w/w), 40% moisture content, pH 8 and at 45 °C temperature. We obtained 29% dry weight reduction after 10 d of incubation under SSF. Our results indicate scope for the utilization of seafood waste for industrial production of chitinase using SSF.

Biography

Saavi Pradhan has her expertise in the field of Microbiology and analytical research studies with experience contribution in microbiological studies of Great Indian Desert soils. Phytopathogens which cause severe damage to commercial crops were also studied and successful field trials have been done. Her work also involved pest control biological methodologies to overcome disease causing pest issues.

sjorwal88@gmail.com