

Researchers identify a new gene that could be used for retting plant biomass

By Sunderarajan Padmanabhan

New Delhi, January 29: Researchers from Sikim-based Institute of Bioresources and Sustainable Development (IBSD) and Mohali-based Centre of Innovative and Applied Bioprocessing (CIAB) have identified a novel gene encoding pectate lyase from the metagenomic data generated from water and soil sample of a hot spring located in north Sikkim called Reshi.

On BLAST analysis, no significant similarity was obtained with any gene in the public (NCBI) database at the nucleotide level. At the protein level, the gene showed the maximum identity of 58% with an uncharacterized protein from a bacteria called *Rheinheimera* sp.

The novel gene was recombinantly expressed, and the protein was tested to catalytically synthesize pectic oligosaccharides from the pectin of higher degree of methylation. The novel biocatalysts showed maximum pectin depolymerization at 50°C. It was found to be catalytically active over a broad range of pH levels. However, the maximum production of 4,5-unsaturated galacturonides and polygalacturonic acid was obtained at pH 10 in 50mM Glycine-NaOH buffer. This implies that enzyme is an alkaline pectinase. This invention can be used as a promising catalytic system for production of pectic oligosaccharides.

The scientists have filed a patent for the invention. The Patent File No. is 201911030029. The joint study team consisted of Sudhir P. Singh, Nitish Sharma, Amit K. Rai, and Dinabandhu Sahoo.

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