Isolation and Identification Polygalacturonase Producing Bacteria Using 16s rDNA Molecular Marker

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Background & Objectives: Polygalacturonases (PG) are Catalyze hydrolysis of α- 1,4-glycosidic linkages in pectic acid that catalyze the hydrolysis α-1,4-glycosidic linkages on pectic acid.The pectic polysaccharides contain galacturonic acid link at α-1, 4-glycosidic.Pectinases have been used in several conventional industrial processes, such as fruit juice extraction, textile processing, degumming of plant bast fiber, clarification of fruit juices, coffee & tea fermentation and oil extraction.The aim of this work was to perform the screening of microorganisms that able to produce polygalacturonase using 16S rDNA molecular marker.

Methods: Samples were collected from soil, fruit and vegetable wastes. Screening and isolation of pectinolytic bacterial was carried out by streaking on specific medium and lugol's solution was added to detect clear zone of pectinolytic bacteria. Production of pectinase was based on submerged fermentation after 72h of incubation. Polygalacturonase (PG) activity was determined by measuring the release of reducing groups using the methods of dinitrosalicylic acid. Molecular identification of this bacterium using PCR with universal primers and sequencing 16S rDNA was indicating to highest similarity with Delftia.

Results: In this study we isolated 14 strains from 5 different genuses include Erwinia, Delftia, Bacillus, Acinetobacter & Ralstonia. The maximum enzyme activity was found for Delftia sp at pH 7 and 37°C.

Conclusion: Delftia.sp showed high pectinolytic activity and with optimization of growth condition may a have the good potential for industrial purposes.

Keywords: Bacteria; Polygalacturonase; Molecular Marker