

## **Pectin Degrading Enzyme: Entrapment of Pectinase Using Different Synthetic and Non-Synthetic Polymers for Continuous Degradation of Pectin Polymer**

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**Abstract :** Pectinase is a heterogeneous group of enzymes that catalyze the hydrolysis of pectin substances and widely has been used in food and textile industries. In current study, pectinase from *B. licheniformis* KIBGE-IB21 was immobilized within different polymers (calcium alginate beads, polyacrylamide gel and agar-agar matrix) to enhance its catalytic properties. Polyacrylamide gel was found to be most promising one and gave maximum (89%) immobilization yield. While less immobilization yield was observed in case of calcium alginate beads that only retained 46 % activity. The reaction time for maximum pectinolytic activity was increased from 5.0 to 10 minutes after immobilization. The temperature of pectinase for maximum enzyme activity was increased from 45 °C to 50 °C and 55 °C when it was immobilized within agar-agar and calcium alginate beads, respectively. The optimum pH of pectinase didn't alter when it was immobilized within polyacrylamide gel and calcium alginate beads, but in case of agar-agar it was changed from pH 10 to pH 9.0. Thermal stability of pectinase was improved after immobilization and immobilized pectinase showed higher toleration against different temperatures as compared to free enzyme. It can be concluded that the entrapment is a simple, single step and promising procedure to immobilized pectinase within different synthetic and non-synthetic polymers and enhanced its catalytic properties.

**Keywords :** pectinase, characterization immobilization, polyacrylamide, agar-agar, calcium alginate beads

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