

生化工程专栏

Purification and Characterization of Three Alkaline Endopolygalacturonases from a Newly Isolated *Bacillus gibsonii*

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摘要 A newly isolated *Bacillus gibsonii*, designated as S-2 (CGMCC1215), was cultivated for production of alkaline pectinases utilizing sugar beet pulp as growth substrate. Purification of three alkaline endopolygalacturonases (endoPGs) from the crude pectinases extract was carried out by ultra-filtration, ammonium sulphate fractionation and ion-exchange chromatography, and their enzyme activities characterized. The three purified alkaline endoPGs, designated as S-I, S-II, and S-III, had a molecular weight about 38 kDa as determined by SDS-PAGE. The K_m value and optimal temperature for optimal enzyme activities of S-I, S-II and S-III were 1.2 mg/mL and 60°C, 0.9 mg/mL and 55°C, 1.1 mg/mL and 60°C, respectively. Their best performances were given at an optimal pH 10.5, and sodium polygalacturonate was found to be the best substrate. The isoelectric points of S-I, S-II and S-III were 5.4, 7.4, and 8.2, respectively. Surfactants of Tween-80 and Tween-20 and metal ions such as Mg^{2+} and Ca^{2+} stimulated the activity of S-I, S-II and S-III, whereas S-III was inhibited by Ca^{2+} , and Mn^{2+} and Zn^{2+} ions inhibited the activity of the three enzymes.

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