Thesis Title	Selection of Cellulosome Producing Microorganism from Thermophilic Anaerobic Digester and Optimization of Cellulosome Production and Adhesion on Insoluble Cellulose
Thesis Credits	12
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Abstract

A thermophilic anaerobic bacterium belonging to the genus *Bacteroides* was isolated from a biogas reactor incubated at 55^{0}C and was designated as *Bacteroides* sp. P-1. *Bacteroides* sp. P-1 produces cellulosome when grown in an avicel medium. The cellulosome has specific adsorption on insoluble cellulose (avicel) but not on insoluble xylan and comprised of cellulase and xylanase activities. Optimum pH and temperature for growth and production of cellulosome by the bacterium, *Bacteroides* sp. P-1 were pH 8.0 and at 60^{0} C. Adhesion of cellulosome on avicel reached maximum value at 55^{0}C in phosphate buffered saline solution at pH 8.0 and NaCl concentration at 150 mM. Ferric and Ferrous ions enhanced the ability to adhere on avicel. Purification of cellulosome can be done in one step usion of affinity adsorption-desorption on insoluble cellulose. Purified cellulosome exhibited the 12 subunits with molecular weight of 35,400 47,800 50,100 56,200 66,000 95,400 112,200 123,000 131,800 158,400 181,900 and 208,900 dalton respectively on sodium dodecyl sulfate - polyacrylamide gel electrophoresis.

Keywords : cellulosome / *Bacteroides* sp. / thermophilic anaerobic bacterium / adsorption-desorption on insoluble cellulose