

Production of cellulase by *Cellulomonas uda* using banana fruit stalk under Solid substrate fermentation

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Research on cellulase has progressed very rapidly in the past few decades, emphasis being in enzymatic hydrolysis of cellulose to glucose. Development of an economical process for cellulase production is hindered because of high cost of the substrate (pure cellulose) and some of the chemicals such as protease, peptone and because of low yields of cellulase per unit of cellulose. To overcome these bottlenecks, cheap source are used which require minimum pre-treatment and purification and increased cellulase yields per unit of cellulose.

Banana (*Musa sapientum*) fruit stalk abundantly available in banana production fields and markets, appear to be favorable substrate as it is cheaply available in the tropical and sub-tropical countries and has a cellulose content of 23.85%. It accumulates in the agro industrial yards, has no significant industrial and commercial uses but contribute serious environmental problems. According to 2009 NABARD statistics average yield of banana per hectare per year is 30.63 tonnes

in India. Thus contributing to abundant availability of Banana fruit stalks which can be used as substrate in solid substrate fermentation.

Cellulomonas uda is an actinomycetes which is capable of feeding on cellulose as carbon source. To date, the production of cellulase has been widely studied in submerged culture process but the relatively high cost of enzyme production has hindered the industrial application of cellulose bioconversion. Adopting Solid substrate fermentation is an attractive process to produce cellulase economically due to its lower capital investment and lower expenses.

In our present work, Production of cellulase by *Cellulomonas uda* by using banana fruit stalk under solid state fermentation, the activity of cellulase obtained is 6.39 U/ml at an optimum conditions of pH 7.79, temperature 35°C, incubation time 96 hrs .

