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BELGAUM-590014

K.L.E.Society's

B.V.Bhoomaraddi College of Engineering & Technology

Department of Biotechnology

Hubli-580031

A Project Report on

COST EFFECTIVE PRODUCTION OF CELLULASE FROM A NOVEL MICROORGANISM

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Under the guidance of

Prof. V.S.Hombalimath
Department of Biotechnology
BVBCET, HUBLI

Prof. Savitha Desai
Department of Biotechnology
BVBCET, HUBLI

Submitted By

Hema Rao	**2BV07BT021**
Sampada.C.Kulkarni	**2BV07BT046**
Shwetha.S.Karajagi	**2BV07BT052**
Sowndarya	**2BV07BT054**

ABSTRACT

Cellulase is among the industrially important hydrolytic enzymes and is of great significance in present day biotechnology. Cellulase refers to a family of enzymes which act in concert to hydrolyze fiber of plant cellwall to glucose, cellobiose or cello-oligisaccharides. Cellulase is produced by wide range of microorganisms including bacteria, actinomycetes, fungi and yeasts.

The main challenge of an economical bioconversion process is to search and identify the potential microorganisms and suitable media composition for higher productivity. Carbon source and its pretreatment is the major cost contributing factor for the commercial enzyme production. Cellulase enzyme production with expensive media constituents-pure cellulose, glucose, peptone, urea, $(NH_4)_2SO$, $FeSO_4$, $MnSO_4$, $CoCl_2$, $CaCl_2$ etc have been reported by many researchers. Therefore, by conducting systematic screening studies using agro wastes as a basal media, optimum composition of the co-substrates can be selected in an effort to reduce the production cost of cellulase enzyme production, by implementing statistical tools like Plackett Burmann design and Response Surface Methodology. Isolate 1.p. showed maximum activity of 1.608 U/ml on 7^{th} day in media containing Carboxy Methyl Cellulose as carbon source. The optimization by PB design using Parthenium as carbon source and yeast extract as nitrogen source resulted into the cost effective production of cellulases.

Keywords: Cellulase, PB design.