

CHAPTER 40

MICROBIOLOGY

Doctoral Theses

439. ANAND (Pinki)
Microbial Production of 1,3-Propanediol : Process Optimization, Scale Up, Purification, Characterization and Potential Industrial Applications.
Supervisor : Prof. R K Saxena
Th 18207

Abstract

The present investigation is designed and executed to obtain a potent 1,3-propanediol producer. In this respect, bacterial sources have been evaluated for their ability to produce 1,3-propanediol. Attempts are made to process optimize the 1,3-propanediol production, its scale up to 30 L fermentor, purification, characterization and potential applications in polymer synthesis followed by characterization of synthesized polymers. Two novel procedures are developed for screening 1,3-propanediol producers and down stream processing for purification of 1,3-propanediol which will significantly contribute to the research on 1,3-propanediol.

Contents

1. Introduction. 2. Review of literature. 3. Materials and methods. 4. Observations and results. 5. Discussion. 6. Summary and conclusions.

440. TIWARY (Ekta)
Novel Bifunctional Chimeric Keratinase from *Bacillus licheniformis* ER-15 and its Biotechnological Applications.
Supervisor : Prof. Rani Gupta
Th 18275

Abstract

In the present investigation, extracellular expression is obtained using spa promoter and protein A signal along with

“ZZ” domain based on IgG binding sites. Under the direction of protein A signal, expressed protein gets secreted as a fusion protein with “ZZ” peptides under non inducible system. This vector has been used for expression of several other proteins. The high specific activity in this investigation is attributed to its extracellular nature of protein since the *E.coli* expression host has much less extracellular protein in comparison to the intracellular cytoplasmic protein. Further, GGT gene from *Bacillus Licheniformis* ER-15 is amplified and sequenced. Sequence analysis revealed that it shared 99% homology with GGT from *B. licheniformis* DSM 13, 17% with *B. subtilis* 168, 76% with *B. pumilus* SAFR032 and only 26% with *E. coli*.

Contents

1. Introduction. 2. Review of literature. 3. Materials and methods. 4. Observation and results. 5. Discussion. 6. Summary and conclusions. 7. Bibliography.