

C626746 : MAJOR BIOTECHNOLOGY

KEY WORD CYCLODEXTRIN GLUCANOTRANSFERASE / CYCLODEXTRIN / OLIGOSACCHARIDES / CARBOHYDRATE / *Bacillus* sp. A11

NARTNAREE RATTAPAT : EFFECT OF SOME CARBOHYDRATES ON THE INDUCTION OF CYCLODEXTRIN GLUCANOTRANSFERASE AND CYCLODEXTRIN PRODUCTION BY *Bacillus* sp. A11. THESIS ADVISOR : ASSIST. PROF. TIPAPORN LIMPASENI, Ph.D., 106 p.p. ISBN 974 - 636 - 478 - 2

Several kinds of carbohydrate were used to induce cyclodextrin glycosyltransferase in *Bacillus* sp. A11 and it was found that *Bacillus* sp. A11 was able to produce high amount of cyclodextrin glycosyltransferase (CGTase) in the Horikoshi's medium which contained 2.0% dextrin type II (w/v) as inducer. Comparison of CGTase induced by dextrin type II and rice starch by non-denaturing polyacrylamide gel electrophoresis found that the protein pattern and enzyme activities pattern were similar. Isoelectric focusing gel electrophoresis (IEF) showed that dextrin type II may be able to induced some form of CGTase isozyme better than rice starch. The CGTase induced by dextrin type II was further studies for cyclodextrin production by using different carbohydrates and oligosaccharide as substrates. It was shown that short-chain carbohydrates gave higher γ -CD than long-chain carbohydrates. When maltooligosaccharides were used as substrate, maltotetraose(G4) and maltopentaose(G5) produced high proportion of γ -CD and were selected as the most appropriate substrates for high γ -CD production. The optimum condition for high γ -CD was incubating 50 units CGTase/g carbohydrates (E:S = 1:200,000; w/w) with 2.0 % substrate(w/v) for 24 hours.

ภาควิชา.....

สาขาวิชา.....

ปีการศึกษา.....

ลายมือชื่อนิสิต.....

ลายมือชื่ออาจารย์ที่ปรึกษา.....

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

หลักสูตรเทคโนโลยีทางชีวภาพ

2539