WALAYA TECHAIYAKUL : PRODUCTION AND CHARACTERIZATION OF CYCLODEXTRIN GLUCANOTRANSFERASE. THESIS ADVISOR : ASSISTANT PROF. PEERADA MONGKOLKUL, Ph.D., 120 PP. ISBN 974-579-450-3.

Cyclodextrin glucanotransferase (CGTase) is a unique enzyme which converts starch or other α-1,4-glucans to cyclodextrins. Studies on Bacillus TISTR 5.7 strains showed that the bacteria grew but not produced CGTase in the culture broth. Bacillus A11 produce extracellular CGTase in the starch - containing growth medium, pH 9.0 at 37 °C for 3 days. Analysis by micro-crystalline cellulose thin-layer chromatography and high performance liquid chromatography indicated that Bacillus A11 generates only β-cyclodextrin in this condition.

CGTase from Bacillus A11 was purified about 59 - fold by starch absorption, ammonium sulfate fractionation, DEAE-cellulose column chromatography. This enzyme preparation was separated into two fractions in disc-electrophoresis stained by coomassie brilliant blue R 250 and 0.2% iodine solution. The enzyme showed only a single band when assayed by SDS-polyacrylamide gel electrophoresis. The molecular weight was estimated to be 72,000. The crude and partially purified enzyme possessed its maximum cyclodextrin-forming activity in the pH range of 4 - 9 and at 40 - 50 °C and was stable in the pH range of 6 - 9 and up to 50 °C.