CHAPTER V

CONCLUSION

1. CGTase from *Bacillus* sp. A11 were successfully separated by preparative gel electrophoresis into 5 fractions corresponding to their separation on native polyacrylamide gel electrophoresis.
2. The enzyme bands 1 to 4 observed on non-denaturing PAGE contained both dextrinizing and CD-forming activity stain were CGTase isozymes, while band 5 only exhibited dextrinizing activity without production of cyclodextrins.
3. These 5 enzyme bands were shown to be glycoproteins with different carbohydrate content of 20.5, 18.7, 14.4, 47.6 and 36.3%(w/w) for bands 1, 2, 3, 4 and 5, respectively. Their molecular weight on SDS-PAGE were the same at 72,000 daltons, with pI value of 4.73, 4.49, 4.40, 4.31 and 4.23, respectively.
4. The optimum conditions for dextrinizing activity of these 4 isozymes were in the pH range of 5.0-6.0 and 60°C. However, the CD-forming activity for bands 1 and 2 were highest in the pH range of 6.0-7.0 and 40°C, while activity of bands 3 and 4 were highest at pH 6.0 and 50°C and 7.0 and 50-60°C, respectively.
5. All CGTase isozymes can produce mainly β-CD. However, bands 1 and 2 can produced slightly higher α-CD than γ-CD while band 4 produced more of γ-CD. Moreover, their linear oligosaccharide products were different. Bands 1 and 4 yielded the highest amount of G7 whereas bands 2 and 3 gave highest amount of G1 and G2, respectively. For band 5, only linear oligosaccharides were detected with no CD products.

6. In the study of amino acid compositions, these 5 enzyme bands showed some differences especially in the amount of glutamine, histidine, arginine, alanine, proline and tyrosine.