CHAPTER V
CONCLUSIONS

The present studies indicated the physical insertion and chemical conjugation of the model drug into chitosan by molecular design approach. Although 6-*O*-carboxyl chitosan was successfully prepared, the chromium ion from the oxidation agent seemed to be entrapped in chitosan chain owing to the ion cheleating property. This limited the present work for the conjugation of model drug, chloramphenicol, into the 6-*O*-carboxyl chitosan.

N,*N*'-carbonyl diimidazole was originally applied as a spacer for chitosan to modify on C-6 primary alcohol to an activated ester. Qualitative FTIR showed the successful introduction of chloramphenicol onto chitosan. The prodrug can be concluded for the structure as a diester of carbonic acid which is easily hydrolyzed in acid or base condition.

The controlled release studies indicated that drug retardation or slow release depended on the pH of the system. In the case of physical insertion system, the pH changing induced the strength of hydrogen bonding in acidity and basicity differently which was the main factor for drug release. For the chemical conjugation, pH effected to the release system by the acid or base hydrolysis mechanism.