



CHAPTER V

CONCLUSIONS

Calcium alginate and chitosan-coated calcium alginate films were prepared and characterized for their mechanical properties, swelling behavior and drug release characteristics. Tensile strength and Young's modulus of alginate film could be improved by cross-linking with calcium ion and further coating with chitosan. For swelling behavior studies, the films possessed pH-sensitive character on swelling and drug release. However, both calcium alginate and chitosan-coated calcium alginate films could not retain their shapes at pH 7.2. The films dissolved in buffer solution pH 7.2 within 20 and 10 minutes for calcium alginate and chitosan-coated calcium alginate films, respectively. The degree of swelling of the films at pH 5.5 was higher than at pH 2.0 because of the ionization of carboxyl group of alginate. For drug release studies, model drugs used were salicylic acid and theophylline. It was found that the amount of drug release from both calcium alginate and chitosan-coated calcium alginate films at pH 5.5 were higher than at pH 2 for both types of model drugs. The amount of theophylline released from the films was higher than salicylic acid released for all pH studied. The formation of ionic complex at the interface between alginate and chitosan could occur due to the electrostatic interaction between carboxyl groups of alginate and amino groups of chitosan. The ionic complex at the interface of chitosan-coated calcium alginate films might play an important role in improving some mechanical properties and swelling behavior, however the coating of alginate with chitosan reduced the amount of drug release of the films.