CHAPTER IV

CONCLUSIONS

Propranolol HCl osmotic pump tablets using chitosan as film former were prepared by pan-spraying method which was unsophisticated process and without the utilization of organic solvent. Passageway was performed with high speed drilling machine to be a channel to release drug.

The influence of molecular weight of polymer on drug release characteristic was investigated. Lower molecular weight of chitosan exhibited slower drug release than those of high molecular weight due to more stiffness and ionic interaction between chitosan with acetic acid and magnesium stearate with chitosan acetate. The retardation of drug release of tablet coated with chitosan after exposure to accelerated condition was remarkably evident. Greater prolonged drug release was due to the thermally induced conversion of a water-soluble solid comprised of ionic complex between chitosan and acetic acid converted into a water-insoluble chitin film. Hence, long treatment period also affected the durability, water permeability and release kinetic of membrane. The passageway could increase the water intake and outtake rate through the membrane. Thus, the passageway had a tendency to increase release rate and decrease lag period especially on the coated tablet with long period of treatment. The passageway had an influence on the initial drug release of long treatment coated tablet. However, the effect of size of passageway was minimal. It might be due to the dominant of osmotic system. Drug release pattern in dissolution fluids with different osmolality revealed that enhancement of osmotic pressure in dissolution medium would prolong the lag time and decreased the drug release rate. It could be explained the osmotic pressure had affected the drug release characteristics. An osmotically active agent, sodium chloride added into core tablets in different concentrations affected the physical properties of core and coated tablets. The retardation of drug release due to longer lag period was obviously evident after incorporation of sodium chloride. This evidence was attributed to the change of chitosan conformation by ionic strength effect. In addition, the drug release

mechanism appeared to be concomitantly a combination of drug diffusion through the porous structure and osmotically driven release.