CHAPTER V
CONCLUSION

The releases of theophylline, salicylic acid, diclofenac sodium and amoxicillin trihydrate from crosslinked chitosan/silk fibroin blend films were investigated using modified Franz diffusion cell. The blend composition (chitosan and silk fibroin) could affect the degree of swelling and the releases of model drug from chitosan and the blend films. For all model drugs studied, the maximum drug releases were obtained for the blend films with 80% chitosan content. The results of drug releases correlated to the swelling behavior of the blend films. The higher the degrees of swelling, the higher the amounts of drug released. This might be said that the releases of model drugs from the blend films were mainly occurred due to swelling-controlled release mechanism. However, the release of model drugs occurred due to erosion process as well. The orders of drugs from the highest release to the lowest release was as follows: salicylic acid > theophylline > diclofenac sodium > amoxicillin trihydrate. Although there are several factors, such as molecular weight of drug, interaction between drug and polymer matrix and solubility of drug, affecting the drug release characteristics, it seemed that molecular weight of drug played an important rule on drug release in this study. In addition, the thickness of the films was another factor that influenced on the amount of drug released. The increase in the thickness of the films resulted in the decreases in the amounts of drug released. In term of kinetics, all the drug release data were either fitted to zero order or Higuchi's model. It could be said that the drug permeation was either rate-controlled or diffusion-controlled release. From this study, it might be concluded that the crosslinked chitosan/silk fibroin blend films were possibly used as the matrix of the transdermal drug delivery system.