

CHAPTER V

CONCLUSIONS

In this study, formulation of AZT transdermal drug delivery system can be summarize as follows:

1. AZT, a hydrophilic compound, has pK_a value of 9.9
2. AZT has a log K (octanol-phosphate buffer pH 7.4) of 0.02, which indicate that it will possibly be diffused, even if limited and need to enhance, into the stratum corneum and partitioning into the underlined tissue.
3. In the preformulation study, AZT can be dissolved in various solvents. The co-solvents were prepared in order to improve solubility of AZT.
4. The binary vehicle of ethanol/IPM could be the best enhance AZT permeation across newborn pig skin. Moreover, the candidate binary vehicle ratios of ethanol/IPM were found to be 20/80, and 30/70. IPM combined in ethanol was dominantly effect on the AZT transport through the skin when it was compared with various hydrophobic vehicles.
5. The various enhancers such as NMP, oleic acid, and lauric acid combined in ethanol/IPM were investigated. NMP (10% V/V) in these candidate binary vehicles had the high flux of 284.92, and 460.34 $\text{mcg}/\text{cm}^2/\text{h}$, which were achieve to target flux of AZT ($208 \text{ mcg}/\text{cm}^2/\text{h}$).
6. Nonporous membrane (9%EVA) was not appropriate for developing AZT transdermal delivery because of the poorly release AZT through it. Both polyethylene and polycarbonate microporous membrane were retarded AZT

permeation from 10%NMP combined in ethanol/IPM (20/80), which fluxes were reduced by a half when compared with AZT permeation through pig skin alone. However, 10% NMP combined with ethanol/IPM (30/70) could be possible for enhancing AZT flux to achieve the target flux. Therefore, this formulation could be developed to AZT transdermal delivery system in the future.

Suggestion for the further study

The developing AZT transdermal delivery system should have more information such as stability of formulation, skin test. Moreover, the comparative of AZT permeation between pig skin and human cadaver skin should be studied. In addition, AZT permeates through various human skins such as dryness skin or oily skin should be known.



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย