CHAPTER V

CONCLUSIONS

The solubility and stability of fluconazole in fluconazole syrup were studied. The results can be summaried as follows :

1. The required solubility of fluconazole in the preparation of fluconazole syrup was 10 mg/ml (50mg/5ml). So that the cosolvent system used for increasing solubility of fluconazole was consist of 4%w/v PEG 4000 - 7%v/v ethanol -7%v/v PG -82%v/v water. This solvent system could give a satisfactory solubility.

2. The assessment of the pH color and clarity of formulation were used in physical stability study. After heating-cooling 6 cycles, the color of syrup was not changed.

3. After storage at 60°C the pH was changed from 5.09 to 3.52 according to the presence of dicarboxylic acid which obtain from the degradation of sucrose. The color was change from pale yellow to dark brown in all formulations. These changing of color might be caused by degradation of syrup in the presence of diluted acid and heat to form the furan group which exhibits brown color.

4. The reaction kinetic of fluconazole degradation in fluconazole syrups was assumed to be zero order.

5. The light acceleration testing did not impose significant effect on degradation of fluconazole.

6. The changes in degradation rate constants by the additions of free radical inhibitor: i.e., propyl gallate; oxygen scavenger: i.e., sodium bisulfite; and chelating agent: i.e., disodium edetate were conclusive. The rate constants did not linearly dependent of concentration. The optimum concentration of each antioxidant should be determined.

7. The Arrhenius plot of ln k versus 1/T exhibited linearity for fluconazole syrup containing 0.001 %w/v propyl gallate. The linearity of Arrhenius plot indicated proper selection of temperature range studied and possible prediction of degradation rate at lower temperatures that could be obtained by extrapolation. From the slope of Arrhenius plot, the heat of activation of fluconazole syrup containing 0.001% w/v propyl gallate was found to be 13.02 kcal/mol which indicated a sovolytic reaction. The normal shelf-life of fluconazole syrup containing 0.001%w/v propyl gallate obtained from predicted rate was 834 days (28 months).

Suggestion for future study :

1. Kinetic study for determination shelf life of fluconazole syrup containing antioxidant must compare with fluconazole syrup without antioxidant because requirement to know the need for use antioxidant in the formula .

2. Factorial design may be used instead of design in this experiment.