CHAPTER V

CONCLUSIONS

S. suis is a serious pig pathogen and is a zoonotic agent which can be transmitted to humans. This study focused on the development of antibacterial combination suspensions for intramuscular injection expected for the treatment of *S.suis* in infected pigs. Antibacterial susceptibility of β–lactams, fluoroquinolones and aminoglycosides were evaluated against *S. suis* isolated from infected pigs in Thai swine farms. Synergisms of two antibacterials were investigated and the most effective combination was selected and utilized in further study. Oil suspensions of the antibacterial combination were formulated in various oils and dispersing agents. Physicochemical properties and stabilities of the suspensions were determined. The results of these examinations were concluded as follows:

1. The MIC results illustrated that 16 local *S. suis* isolates collected from pigs displaying clinical diseases in Thai swine herds were more sensitive to antibacterial agents in β-lactams and fluoroquinolones than aminoglycosides suggesting that antibacterial agents in these 2 groups were in preference in control and treatment of infected pigs with *S. suis*.

2. The synergistic effect of two antibacterials against the *S. suis* isolates was observed in the combinations between β-lactams and fluoroquinolones using checkerboard method. Amoxicillin and enrofloxacin combination was found to be the most effective according to the lowest FIC index. Combination of cefotaxime and gentamicin, a β-lactam and an aminoglycoside, has been clinically used for the treatment of infected pigs. The result presented this combination was less effective than β-lactam and fluoroquinolone combinations.

3. According to heating cooling cycle and stability test, amoxicillin and enrofloxacin suspension in cottonseed oil and Tween 20 was physically stable and in good appearance. Amoxicillin trihydrate and enrofloxacin base were more chemically stable than amoxicillin sodium and enrofloxacin hydrochloride when they were prepared in suspensions containing cottonseed oil and Tween 20. Amoxicillin trihydrate, amoxicillin sodium and enrofloxacin hydrochloride and enrofloxacin base remained more than 95% label amount after 3 months storage at 30 $^{\circ}$C.

4. Only enrofloxacin base showed sustained release longer than 24 hours. Amoxicillin trihydrate, amoxicillin sodium and enrofloxacin hydrochloride reached plateau in 10, 14 and 6 hours, respectively.

For further studies, the particle size of formulation was interesting to be investigated. *In vivo* study should be investigated further in animal to determine the possibility for the treatment of *S. suis* infected pigs.