CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The modified sericin was obtained by using solution blending and chemical reaction with polyacrylamide. For solution blending, the reactive sites of sericin could be combined with polyacrylamide through intermolecular hydrogen bonding. Increasing polyacrylamide content led to increase degradation temperature. This result indicated that we obtained high molecular weight species. For chemical reaction, the hydroxyl groups of sericin could be reacted with polyacrylamide derivative via esterification reaction. Increasing the amount of polyacrylamide derivative led to increase in ester linkage on modified sericin. So, the solubility of modified sericin in water will be decreased.

The modified sericin nanoparticles and nanofibers could be prepared by electrospinning process. In case of modified sericin by solution blending, the morphology of electrospun was aggregate particles and flake due to increasing the sericin content from 20 to 50 %wt. The sericin content was reduced to 10 %wt, the continuous fibrous structure was observed. The best condition to electrospin the nanofibers were using 20 kV of applied high voltage and the average diameter was observed at 134 nm. For modified sericin by chemical reaction, the particles were observed in all ratios. In ratio of 1:1 w/w, the morphology of electrospun was particles like a flake. In ratio of 1:5 w/w, the morphology of electrospun liked a spherical shape. The best condition to observe nanoparticles were ratio of 1:10 w/w.

In further study, increasing the sericin content in electrospinning process will be studied by adding buffer or salt. Adding buffer in sericin may prevent sericin aggregation during the process. Moreover, adding salt in sample may shield the self reaction between reactive sites of sericin. It is also possible to reduce number of TMA to limit crosslinking reaction so that modified sericin (SS-PAM) can be easy to electrospin into nanofibers.