Siriporn Vihokto 2007: Expression of Recombinant VP1 Protein of Foot and Mouth Disease Virus Serotype O in *Escherichia coli*. Doctor of Philosophy (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Theerapol Sirinarumitr, Ph.D. 75 pages.

Currently, there are several approaches to develop the alternative vaccines to prevent and control foot-and-mouth disease. In the present study, the recombinant VP1 (rVP1) capsid protein of FMDV was expressed and tested for rabbit antibody against rVP1. Viral RNA was extracted and used to amplify the whole VP1 gene by RT-PCR using specific primers. The size of amplicons had 633 bps in size. Subsequently, the whole VP1 gene was ligated with plasmid pBad202/D-TOPO and used to transform into *E. coli* strain TOP10. The recombinant VP1 (rVP1) proteins had 40 and 80 kDa in size when determine by SDS-PAGE technique. By western blot analysis, the rVP1 proteins were specifically interact with swine anti-FMDV hyperimmune serum. The optimum temperature and concentration of arabinose for expression of the rVP1 protein was 37 ^{O}C and 0.002% arabinose for 6 hours, respectively.

The purified rVP1 (rVP1) protein was used to immunize rabbits 4 times for 2 weeks interval with 300 or 500 µg of protein per animal per time. By ELISA technique, all immunized rabbits generated antibody to rVP1 protein at 2 weeks after immunization and reached its peak at the 7th week and the level of antibody were stable until the end of experiment at 8th week. The antibody titers were significantly different between the control group and the two treatment groups which were starting at the second week after immunization until the end of the experiment. However, there was no significantly different between the antibody titer from rabbits immunized with both protein concentrations. By serum neutralization technique, rabbits immunized with both concentration of recombinant VP1 protein produced neutralizing antibody against infection *in vitro*.

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