Kanjana Saetiew 2006: Transformation of *VP1* Gene from Foot and Mouth Disease Virus into *Stylosanthes hamata*. Doctor of Philosophy (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Sermsiri Chanprame, Ph.D. 113 pages.
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The *VP1* gene which encodes protein that can induce immunity against the foot and mouth disease virus (FMDV) was transferred to *Stylosanthes hamata* calli via *Agrobacterium* -mediated transformation. The *A. tumefaciens* strain AGL1 possessed plasmid pCABVP1 which contained the *VP1* gene and a selectable marker gene, *hpt*. An *Agrobacterium* suspension at OD_{600} in the range of 0.6-1.0 and a co-cultivation period of 2 days was employed. Only 131 out of 2,200 calli survived in the MS selective medium containing 5 mg/l 2,4-D, 30 mg/l sucrose and 8mg/l agar at pH 5.7 and supplemented with 50 mg/l hygromycin. Surviving calli were regenerated on MS medium containing 15 mg/l BA and rooted on MS medium supplemented with 1mg/l IBA. Of all 300 regenerated plantlets, 93 lines showed PCR positive for only the *VP1* gene, 97 lines showed PCR positive only for the *hpt* gene, while another 75 lines showed positive for both genes. Six lines that showed PCR positive for both, the *VP1* and *hpt* genes, were subjected to Southern blot analysis to confirm the integration of the *VP1* transgene. In some lines, a single copy of the *VP1* gene was found to be inserted into the *S. hamata* genome, however, two copies of the *VP1* gene were also found in the other lines. Two out of six Southern blot positive lines were then subjected to an analysis for the transcription of the *VP1* gene using RT-PCR techniques, and the subsequent result showed positive. In addition the *VP1* protein was detected in these 2 positive lines, using western blot analysis with serum from a FMDV infected pig. Only one line showed the correct expression of the *VP1* gene.

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