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Regional Reference Laboratory for FMD in Southeast Asia (RRLFMD)
NIAH, DLD, THAILAND

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RESEARCH ACTIVITIES

- **Evaluation and comparison of performances of six commercial NSP ELISA assays for foot and mouth disease virus in Thailand**

- **Kingkarn Boonsuya Seeyo[1]**, Amonrat Choonnasard[1], Jeeranant Chottikamporn[1], Sopha Singkleebut[1], Parichart Ngamsomsak[1], Karnrawee Suanpat[2], Nagendrakumar Singanallur Balasubramanian[3], Wilna Vosloo[3] & Katsuhiko Fukai[4]

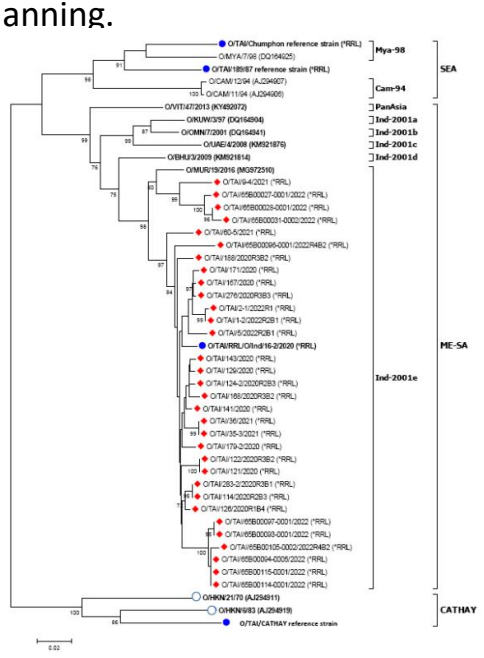
- Journal: Scientific Reports, 2024 Oct 14;14(1):23958. doi: 10.1038/s41598-024-75793-4.

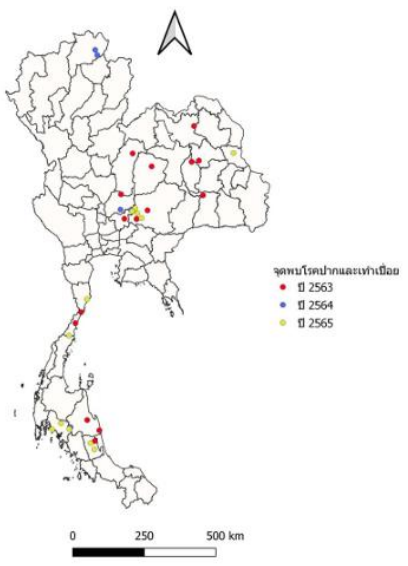
This study evaluated six commercially available NSP-ELISA kits in Thailand—Biovet, ID Screen, VDPro, IDEXX, PrioCHECK, and KUcheck-F—using 800 serum samples. All test kits showed high sensitivity (97.75–99.50%), specificity (97.25–100%), excellent agreement (Cohen's kappa 0.96–1.00), and high diagnostic accuracy (98.13–99.75%). The results suggest that all six kits are statistically comparable and can be used interchangeably for FMD surveillance. However, the ID Screen kit demonstrated the highest sensitivity and specificity, making it the most suitable choice when selecting a single kit for diagnostic or surveillance purposes. These findings provide practical guidance for selecting appropriate NSP-ELISA kits and support the strategic expansion of serological testing for FMD control in Thailand.

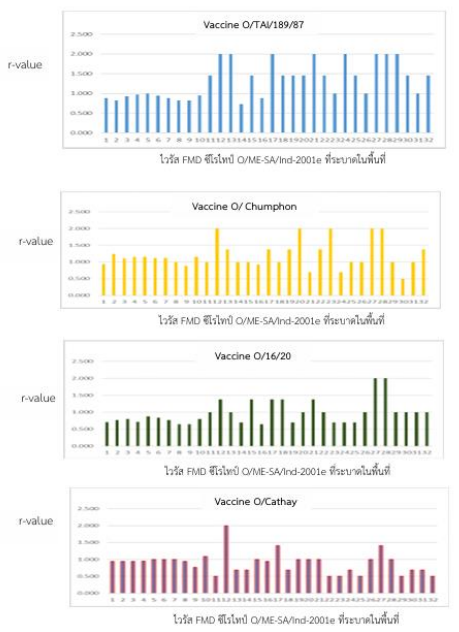
- **Antigenicity comparison of serotype O vaccine strains against foot-and-mouth disease virus from the O/ME-SA/Ind-2001 lineage circulating viruses in Thailand. (On processing publication)**

- **Kingkarn Boonsuya Seeyo[a],*, Jeeranant Chottikamporn[a], Nalinee Hongchumpon[a], Marutpong Pumpuang[b], Pawana Tospitakkul[b], Sopha Singkleebut, Arongkon Pantumart, Parichart Ngamsomsak [a].**

This study demonstrated that the FMDV serotype O strain O/ME-SA/Ind-2001e, which caused outbreaks in Thailand between 2017 and 2019, shows acceptable antigenic correlation ($r_1 > 0.3$) with all four seed vaccine strains currently used in Thailand. Among them, the seed strain O/TAI/189/87 exhibited the highest average r_1-value, indicating the strongest serological match, while O/Cathay had the lowest. These findings confirm that the existing seed vaccine strains, particularly O/TAI/189/87, remain antigenically relevant to the circulating FMDV strains and support their continued use in vaccine production. This data is valuable for guiding timely and appropriate seed strain selection for future vaccine formulation and disease control planning.







RRLFMD IMPROVEMENT ACTIVITIES

The official handover and opening of the Biosafety Level 3 Laboratory (BSL-3) under the Phase 2 Renovation Project at the Regional Reference Laboratory for Foot-and-Mouth Disease (FMD) in Southeast Asia marks a critical advancement in regional and global health security. This achievement is the result of strong collaboration between the Department of Livestock Development, the Mahidol-Oxford Tropical Medicine Research Unit (MORU), and the U.S. Defense Threat Reduction Agency (DTRA) through the Biological Threat Reduction Program (BTRP).

This initiative not only reinforces Thailand's scientific and diagnostic capabilities for transboundary and high-risk animal diseases but also reflects a shared commitment to capacity building, knowledge exchange, and sustainable cooperation. The enhanced BSL-3 facility will serve as a cornerstone for regional preparedness and response, contributing significantly to the One Health approach—safeguarding the health of animals, humans, and the environment.