



27th SEACFMD National Coordinator Meeting - Luang Prabang, Laos



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Evaluation of the performance characteristics of Lateral Flow Devices (LFDs) for FMDV detection in Indonesia

Objectives

- Identify suitable, fit for purpose LFDs for antigen detection during FMD outbreaks (DSe and DSp)
- Evaluate the LFDs for their performance characteristics in comparison to PCR
- Standardise methods to recover the FMDV genome from LFDs
- Design and test “Field Lab” arrangement
- Informed recommendations to endemic and free countries on the potential use of these devices in the case of an outbreak

Materials and Methods

Collect mouth swabs (CLASSIQSwabs™) from cattle in Java on LFDs and in virus transport medium  
Target areas with different disease prevalence (10%, 5%, 1%)

LFD Kits

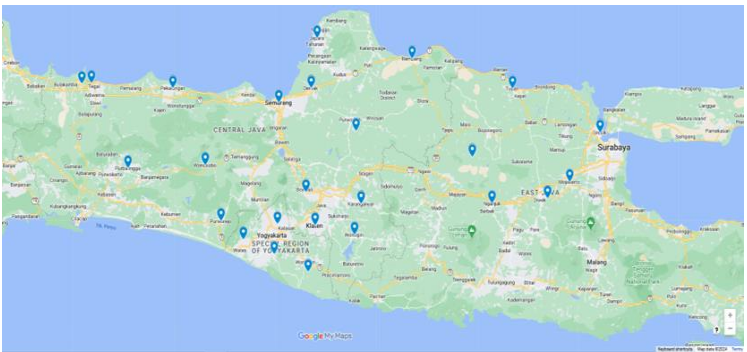
Commercially available, Serotype O specific with local vendor who could import into Indonesia

- VDRG® FMDV 3Diff/PAN Ag Rapid kit (Median Diagnostics)
- RIDX™ FMDV 3Diff/PAN Ag Combo Test (Skyer Inc)

Photograph devices post run, leave in McIlvaine’s citrate-phosphate buffer and dry for transport to laboratory

RNA extraction and PCR

RNA was extracted using the method of Fowler et al 2014 with automated extraction methods  
PCR was performed according to Shaw et al. 2007



Results

Comparison between test methods

	Pos	Neg	Total
VDRG® LFD kit	5	754	763
RIDX® LFD kit	4	753	763
Real-time RT-PCR	63	700	763

Comparison between RNA sample type

	Pos	Neg	Total
Swabs in VTM	28	133	161
VDRG®LFD kit	44	117	161
RIDX® LFD kit	50	111	161

- The weighted Cohen’s Kappa between the VTM and VRDG® kits was 0.50 (0.35-0.66), and between the VTM and RIDX® kits was 0.57 (0.43-0.71) - moderate agreement ( $\kappa>0.4$ )
- The weighted Cohen’s Kappa between the two LFDs was 0.79 (0.69-0.89) - substantial agreement ( $\kappa>0.6$ )

Conclusions

- Narrow sampling window for LFDs during outbreaks (earlier the better)
- Not suitable for surveillance
- Could not determine Dse and DSp due to low number of positive samples
- Both kits performed similar and would be suitable for outbreak investigations
- LFDs are effective transport devices for diagnostic samples for further laboratory studies
- Significant planning and SOPs assist with field studies

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