

# Relative sensitivities of four FMD virus detection techniques

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# Aims

- Compare the relative sensitivities of three common virus detection techniques with a new rapid test
  - Virus isolation (VI) on primary bovine thyroid (BTY) cells
  - Real time RT-PCR
  - Antigen detection ELISA
  - SVANODIP FMD-Ag penside test (Svanova Biotech AB, Sweden)

# Methods

- FMD-O<sub>SEA</sub> homogenate of vesicular epithelia from lesion was serially diluted from 'neat' to 10<sup>-8</sup>
- Serial dilutions tested by VI, Ag ELISA, RT-PCR and penside test
- Following 2 days VI, tissue culture supernatant (TCSN) was retested by Ag ELISA, RT-PCR and the penside test)

# Results

- Original starting dilutions
- Cytopathic effect (CPE) visible to  $10^{-6}$  on BTYs

Results for original starting titrations					
Sample	RT-PCR results		Ag ELISA results		Svanova
	CT value	Interpretation	OD	Result	Pen test
Neat	14.94	POS	1.31	Pos	Pos
10-2	20.6	POS	0.43	Pos	Pos
10-3	23.03	POS	0.09	Neg	Neg
10-4	28.63	POS	0.06	Neg	Neg
10-5	35.67	POS	0.03	Neg	Neg
10-6	0	NEG	0	Neg	Neg
10-7	0	NEG	0	Neg	Neg
10-8	0	NEG	0	Neg	Neg

# Results

- TCSN following 2 days BTY cells

Results for TCSN for after 2 days on BTY cells					
Sample	RT-PCR results		Ag ELISA results		Svanova
	CT value	Interpretation	OD	Result	Pen test
Neat	14.17	POS	0.84	Pos	Pos
10-2	15.58	POS	0.52	Pos	Pos
10-3	22.42	POS	0	*	Pos
10-4	14.74	POS	0.82	Pos	Pos
10-5	12.58	POS	0.89	Pos	Pos
10-6	13.87	POS	0.46	Pos	Pos
10-7	16.71	POS	0.01	Neg	Pos
10-8	35.48	POS	0.08	Neg	Neg

\*BTYs heavily contaminated

# Results

- Svanova penside test
  - Original starting dilutions



# Results

- Svanova penside test
  - TCSN following 2 days on BTYs



# Conclusions

- Virus isolation and real time RT-PCR are the most sensitive virus detection techniques
- Antigen ELISA not as sensitive, but will serotype isolate
- Svanova penside test was as sensitive as the Ag ELISA and can be performed in 10 min

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# Thank you

