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Technical transfer and validation of an EHV-1 and EHV-4 ELISA.

Establishment and validation of an EHV-1/4 specific serology ELISA in order to improve current EHV diagnostic methods and overcome limitation of the EHV complement fixation test (CFT).

SPrj:001

Technical transfer and validation of an EHV-1 and EHV-4 ELISA. (SPrj001)

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Reasons to perform the study:

- Equine Herpes Virus (EHV)-1 and EHV-4 are highly contagious respiratory viruses in horses.
- EHV-1 induces abortion, respiratory and neurological diseases. In recent years, several outbreaks of EHV-1 neurological disease were reported in England. EHV-4 is mostly associated with respiratory infection.
- Rapid detection of exposure is required to identify and manage outbreaks of these viruses. Current serological assays need to be modernised to increase outbreak management efficiency.

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The complement fixation test (CFT) is the serological test of choice for diagnosis.

Main Advantages: CFT determines levels of relatively short-lasting antibody that may be interpreted with reasonable confidence, in absence of recent vaccination, as evidence of EHV-1 exposure.

Significant disadvantages: CFT requires qualitative interpretation by experienced technicians, EHV-1/4 cross-reactivity, difficulty to automate for high throughput capacity and extended turnaround time.

Project objectives:

This project aimed to establish and validate a serology ELISA recently described, in order to overcome the CFT disadvantages.

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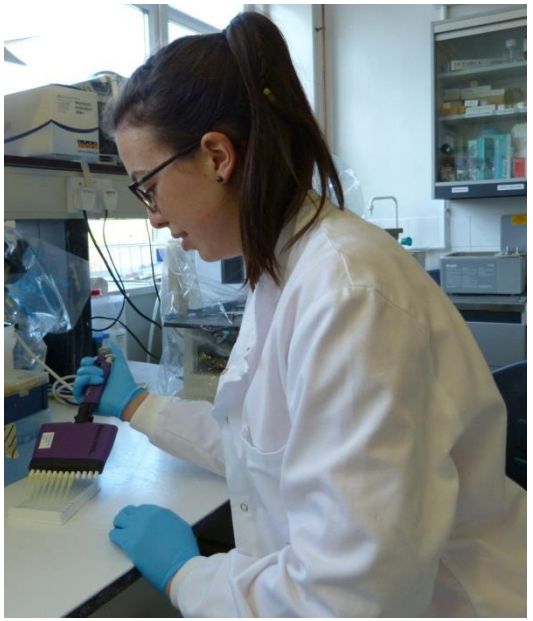
Experimental approach:

Peptide specific to EHV-1 and EHV-4 were evaluated to develop an EHV-1/4 discriminatory ELISA. Negative and clinical positive serum panels were used. In parallel, the EHV CFT was optimised.

Key results:

- Of all the peptides tested, the EHV-1 antigen "KKPP" best measured sero-conversion subsequent to EHV-1 infection.
- However, the "KKPP" ELISA seemed to detect a late-stage IgG response specific to EHV-1 infection.
- The EHV CFT can be improved by automation of the reading process using a colorimetric revelation assay.



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Conclusions and implications:

The EHV-1 antigen "KKPP" can detect EHV-1 specific sero-conversion, but is not suitable for developing a rapid diagnostic EHV ELISA able to replace and/or complement the current EHV-1/4 CFT.

However, the EHV CFT may be optimised by the application of a colorimetric assay, reducing the subjectivity of the reading process and improving standardisation.