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Guest Editorial

Spots on the Importance of the Equine Herpes Virus and its Diagnostic Tools

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Abstract

Nine herpes viruses have been identified to infect the family Equidae. EHV-1 is the most important one all over the world. The virus has significant economic importance either in the well-developed countries or the poor ones. So, diagnosis and identification of the causative agent during the outbreaks adding to the structured surveys is crucial to prevent the occurrence and or spreading. Multiple serological techniques like ELISA, complement fixation (CF) and virus neutralization (VN) were routinely used. Recently, molecular characterisation by different PCR types was extensively performed due to its accuracy, easiness, and time saving. Furthermore, the real- time PCR (RT-PCR), enables the quantification of viral loads and differentiation between replicating (lytic), non-replicating or latent virus.

Keywords: *EHV-1; Diagnosis; Serological Tools; Molecular; RT-PCR*

Philosophy

The main target of this mini review was to highlight the importance of the equine herpes viruses (EHVs) and the tools for diagnosis. The different EHVs mainly type-1 are considered the most important viral diseases affecting the Equidae family and consequently the equine industry all over the world due to their wide distribution, variable range of hosts, and formation of latency status in the infected cases [1].

The susceptibility of horses to be re-infected several times due to the temporary host immune response either from vaccination or active infection necessitates accurate and rapid diagnosis to prevent virus's spreading. Especially that, clinical sign alone was not enough to differentiate it from those of the other viruses that mainly infect the respiratory system or the nervous one. Samples including nasal swabs, blood with and without anticoagulant, vaginal swabs, and tissues from the aborted foeti organs or placenta could be used for the several diagnostic techniques [2].

Virus isolation on different cell lines including those from the horse like foetal horse kidney (FHK), rabbit (RK-13), monkey (Vero), and cattle (MDBK) still the golden and master technique for diagnosis but it has many drawbacks. The cytopathic effect (CPE), develops rapidly in cell cultures as clusters of rapidly enlarging, rounded, and detached cells that are characteristically in appearance [3]. Accordingly, several diagnostic techniques were developed like enzyme-linked immunosorbent assay (ELISA), complement fixation (CF), and virus neutralization (VN) [2]. Unfortunately, serological surveys of EHV-1 and 4 have always been complicated because of the high antigenic cross reactivity between them, the lack of type specific antibodies and widespread use of vaccination. While, immunofluorescence and

immunohistochemistry using immunoperoxidase staining might be used for antigen detection in impression smears from infected cases. Histopathological examination of paraffin-embedded tissue sections can also be employed to identify pathognomonic lesions typical of EHV-1 infections. However, these findings should also be verified by virus isolation from the submitted clinical specimens [4].

Recently, the molecular based techniques were extensively used and became the tools of choice due to their high sensitivity and specificity. Detection and identification of EHV-1 by PCR are routinely done to confirm infection in secretions collected by nasal or nasopharyngeal swabs or from uncoagulated blood samples. Many conventional PCR detection protocols using single or nested methods and targeting specific EHV-1 genes have been published in recent years [5]. Furthermore, the real-time PCR (RT-PCR), enables the quantification of viral loads and has the ability to differentiate between replicating (lytic), non-replicating or latent virus [6].

Conclusion

It could be concluded that, diagnosis of equine herpes viruses is the first step to control the disease spreading. Accordingly, developing of new tools specially the molecular based ones is crucial specially to differentiate between the different types and detect the latency status.

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