

RESEARCH INTO THE DISSEMINATION AND REPLICATION OF THE AFRICAN HORSE SICKNESS VIRUS IN THE VIRUS CARRYING MIDGE

Despite its important role in the carrying of the African Horse Sickness Virus (AHSV), little information is available on how this virus is spread in the midge (*Culicoides [Avaritia] imicola* Keiffer). The Equine Research Centre, together with Onderstepoort Veterinary Research, the Department for Veterinary Tropical Diseases, University of Pretoria and the Institute for Virology, Germany, recently conducted research on the detection of AHSV in dissected midges.

Researchers used the real-time quantitative reverse transcription polymerase chain reaction (RT-qPCR) method to conduct this study. In this research a total of 96 midges were fed on AHSV-infected blood, after which one test group was dissected into head/thorax and abdomen segments immediately after feeding and the other only after 10 days of incubation.

In the first test group, it was found that there was no significant difference between the virus concentration in the heads/thoraxes and the abdomens immediately after feeding.

In the second test group, which was dissected after 10 days of incubation, the virus was found in 51% of the midges and it was confined to the abdomen in the majority of these. Only four of this group showed a presence of the virus in the head/thorax, which suggests in these cases that there was a barrier between the head/thorax and the abdomen preventing the virus from migrating. Replication in the salivary glands was not shown.

An increase of the virus concentration in the abdomen after incubation indicates localised viral replication.

The real-time RT-qPCR research protocol has been shown to be a very sensitive method for investigating AHSV viral load differences in different body parts of the *Culicoides* midges and is recommended for further studies investigating the replication and dissemination of AHSV in *Culicoides* midges. Future studies should include investigations of AHSV viral load in salivary glands and/or saliva.

The RT-qPCR protocol is capable of detecting AHSV viraemia prior to the development of clinical signs and can be used for the detection of various other diseases, e.g. Blue Tongue Virus (endemic to cattle mostly in the USA).

The research team is 75% on the way to having the RT-qPCR protocol officially accredited by the World Organisation for Animal Health (OIE). The next step is to test the protocol in other labs around the world to ensure that the same results are achieved as in South Africa.

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