

Working towards a Hendra virus vaccine

Adopting improved infection control strategies is necessary to reduce the transmission risk of Hendra virus (HeV). Reducing the load of HeV in infected horses is another way to reduce the risk of transmission to people, and the most successful way to do this is likely to be by vaccinating horses.

One of the major and unanimously accepted recommendations made at the recent International Henipavirus Workshop, which was co-sponsored by the World Health Organisation and the Food and Agriculture Organisation of the United Nations, was that "Vaccination for horses should be prioritised for Hendra control".

There are currently two very promising candidate vaccines which have shown to be effective in preventing infection with Hendra and Nipah viruses using pigs and cats as experimental animals.

One candidate vaccine has been developed by Merial – the canarypox vectored recombinant vaccine. The other utilises the soluble surface G glycoprotein (that is responsible for attaching the virus to the host cell during the infectious cycle) as the immunogen. This has been developed and patented by American scientists from the Uniformed Services University, and funded by the United States Department of Homeland Security, working in conjunction with scientists at the Australian Animal Health Laboratory (AAHL) in Geelong.

Workers at AAHL have already shown that viral shedding is reduced or may even be eliminated in cats immunised against HeV using vaccines formulated with the HeV G glycoprotein.

The next important phase in vaccine development is a horse trial using the very promising soluble G Hendra virus vaccine candidate. The trial is scheduled to commence in the second quarter of 2010 and run for approx 15 months, initially at Werribee in Victoria and then moving into high security BSL-4 conditions at AAHL. Work with these lethal live viruses can only be undertaken at the highest level of laboratory biosecurity, and there are only a few of these worldwide. Even fewer are large enough to conduct trials with large animals such as horses. Deborah Middleton, the Program Leader at AAHL, has designed and will conduct the trial.

The trial will measure the efficacy, safety, immunogenicity and duration of immunity of the vaccine. The proposed trial involves 4 groups of 5 horses – 3 groups to receive varying amounts of the soluble G glycoprotein plus adjuvant, and the 4th group to act as a control group and receive only the adjuvant.

The approximate cost is \$930,000 with AAHL already committing \$330,000 and seeking \$600,000 from external sources over 15 months.

So far, no government funding has been promised to fund the horse vaccine research trials despite representations which have been conducted recently. Also, from advice received from Fund administrators at the University of Queensland, the Alister Rodgers Memorial Research Fund will not be providing any funds.

AAHL is, however, determined to start the project with horses because of the deadly nature of the disease and of the potential benefit. If sufficient funding is not received the horse vaccine trial will be downsized significantly, with the serious outcome that delays in vaccine development will occur which might further endanger lives.

In order to raise funds of up to \$1million and to direct all funding straight to AAHL, the Queensland Horse Council Inc has been successful in registering The Queensland Horse Council Inc. Hendra Virus Vaccine Development Trust Fund with the Queensland Office of Fair Trading. The launch of this Fund by Queensland Horse Council Inc was scheduled to coincide with the Royal Toowoomba Show, and members of the families of our late colleagues, Alister Rodgers who died in 2009 and Ben Cunneen who died in 2008, have kindly agreed to help launch the Fund and raise public awareness.

It is anticipated that donations to the Fund will be able to be made by contributions to sponsored events which are to be held throughout Australia, or by visiting the Queensland Horse Council website at www.qldhorsecouncil.com.

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