

Hendra virus facts

July 12 2011

University of Queensland researchers have produced batches of a monoclonal antibody, which may offer hope as a potential therapeutic for Hendra virus infection in humans.

The batches have been developed in UQ's Australian Institute for Bioengineering and Nanotechnology (AIBN).

US Hendra virus expert Professor Chris Broder developed the antibody, which binds to a protein on the surface of [virus particles](#), blocking entry to healthy [human cells](#).

It is hoped that this will then allow the immune system to fight off the virus.

Hendra virus can be passed from bats to horses and in rare cases from horses to humans.

Dr. Alister Rodgers became the first person to receive the antibody treatment in a desperate bid to save his life.

He was working as a vet in Rockhampton when he came into contact with an infected horse and died in 2009.

The antibody was also given in 2010 to two people from the Sunshine Coast exposed to the Hendra virus.

Queensland Health sourced these antibody stocks from the US. It

became clear a Queensland solution was needed to supply larger amounts of the antibody in case of future Hendra outbreaks.

In late 2010, Queensland Health provided 300,000AUD to AIBN to produce batches of the antibody for humans.

Last month AIBN received 180,000AUD in additional funding from Queensland Health to continue producing the antibody, adding to 40,000AUD received from the Alister Rodgers Memorial Fund early in 2011.

The Alister Rodgers Memorial Fund honours the life of Dr Rodgers and was established through The University of Queensland's School of Veterinary Science at the request of his family, to raise money for research into Hendra virus.

To date the AIBN has produced enough of the experimental antibody to treat up to 20 people, with further material to be produced later this year.

In addition, AIBN has produced the antibody for collaborators at the CSIRO Australian Animal Health Laboratory in Geelong for testing in animal trials.

Other CSIRO research is developing a vaccine for horses designed to prevent Hendra infection.

It is considered an experimental therapy because large-scale clinical testing has not been completed on the antibody.

It can only be used in emergency situations with approval from an ethics committee and representatives from the Therapeutic Goods Administration.

AIBN biotechnologist and antibody project overseer Dr Trent Munro said the institute had specialist equipment able to make high-quality batches of the antibody for humans.

Dr. Munro said the antibodies were created in a partner lab at the Uniformed Services University, Bethesda, Maryland in the US as part of a long-standing collaboration with the CSIRO.

“The US lab was able to synthetically produce a portion of the virus and create an antibody that specifically recognised it,” he said.

“[Antibodies](#) can be produced using recombinant DNA technology, where the gene encoding the antibody is transferred to a cell that is able to express large amounts of the protein.”

The US lab provided the cells that were producing the antibody and the AIBN developed a process to produce larger amounts of the antibody. AIBN did not produce any part of the Hendra virus.

For Hendra virus information, visit www.dpi.qld.gov.au/4790_2900.htm

What is an antibody?

An antibody is a blood protein produced in response to – and counteracting – a specific antigen.

What diseases are antibody therapeutics used for?

Antibody therapeutics, also known as biologics, are now widely used for autoimmune diseases such as cancer, arthritis and psoriasis.

What does the Hendra virus antibody do?

The antibody binds to protein on the surface of Hendra virus particles, blocking entry to healthy human cells. The immune system is then able to fight off the virus.

How many people have been given the antibody treatment so far?

Three. All of these people were given an [antibody treatment](#) produced at Walter Reed Army Medical Center in Washington DC. AIBN has since begun to produce an antibody.

Why is the antibody considered experimental and therapy?

The antibody has not been through human clinical trials. Clinical trials take years and involve large numbers of people. The small number of people exposed to the [Hendra virus](#) make clinical trials difficult at this stage.

Who makes the decision about giving people the antibody?

Decisions on administration of the antibody are handled by Queensland Health, specifically the Chief Health Officer and infectious disease experts at the Princess Alexandra Hospital. Any human treatment requires a special approval from an ethics committee and the Therapeutic Goods Administration.

How much of the antibody is available for humans?

A batch of more than 20g has been given to Queensland Health – enough

to treat up to 20 people.

How can the Hendra virus kill?

People develop a flu-like illness, including fevers and respiratory symptoms. The virus causes inflammation in the cells that form in the lining of the body's small blood vessels, particularly those in the brain and the lungs. The virus predominantly infects the cells which form the inside layer of blood vessels. Infection can cause small blood vessels, which supply oxygen to the body, to become obstructed.

Provided by University of Queensland

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