

NIPAH VIRUS: EXPERIMENTAL ANTIVIRAL DRUG SHOWS PROMISE

Relevant for: Developmental Issues | Topic: Health & Sanitation and related issues

Connection: The virus that caused Nipah in India belongs to the same genotype as that from Bangladesh used in the study. | Photo Credit: [G. Ramakrishna](#)

In a new study published last month, researchers from the National Institutes of Health, U.S., have shown that Remdesivir was able to treat four African green monkeys which were given a lethal dose of Nipah virus.

Remdesivir is a broad-spectrum antiviral drug which is currently in phase 2 clinical trial for the treatment of Ebola.

Eight monkeys were inoculated with a lethal dose of Nipah virus Bangladesh strain, and, 24 hours later, four of them were treated intravenously with the drug for 12 consecutive days.

The ones that did not receive the drug developed respiratory problems with the disease rapidly progressing in about a week. Two of these were sacrificed on day seven due to disease severity, and the remaining two were sacrificed on the eighth day when they reached the humane endpoint criteria (when the experimental animal is in pain and/or distress and the experiment is terminated).

The four animals which were treated with the drug survived. They did not show any clinical signs up to 92 days and the experiment was terminated.

Though parameters such as body weight and temperature remained unchanged in the two groups, an increased respiration rate and decreased oxygen saturation (oxygen-saturated haemoglobin versus total haemoglobin in the blood) were seen in the non-drug group.

When asked if these results hold true for Indian Nipah strain, Emmie de Wit, the first author of the study said in an email to *The Hindu*: “The Nipah virus that caused the outbreak in India belongs to the same genotype as the Nipah virus from Bangladesh that we used in our study. So although there are some small genetic differences between the two viruses they are very similar. It is always good to confirm, but we are confident that the drug will be effective against Indian Nipah viruses as well.”

During the course of the study, the researchers found that one of the drug-treated animals exhibited inflammation of the brain tissues.

Dr. de Wit explains, “We know from patients with Nipah virus that they also often develop this disease of the brain when they are infected. There are also patients in Malaysia who were infected with Nipah virus, survived and then got encephalitis caused by Nipah virus several months or years later.” This is most likely because the Nipah virus easily enters the brain and then slowly replicates until it causes disease. “In the animal treated with the drug that had histologic evidence of meningoencephalitis, we did not observe any signs of neurological disease at the time the experiment ended, so we were very surprised to see this meningoencephalitis in a small part of the brain,” she adds.

When asked about the mode of action of the drug, Dr. de Wit writes “Remdesivir can stop the

virus from making new copies of its genome. Because the genome is an essential part of the virus, the virus cannot replicate itself very well in the presence of the drug, and there is less damage to organs and thus less severe disease.”

“Right now, there are two promising antiviral treatments against Nipah virus that could be used in humans soon. The first is a monoclonal antibody developed by Chris Broder and colleagues at the Uniformed Services University in the U.S. The second promising treatment is Remdesivir. Both treatments are available as clinical grade material and have been safety tested in humans. These two treatments could thus be tested in Nipah virus patients in the context of a clinical trial,” explains Dr de Wit.

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