



NEWS RELEASE

U.S. Army Medical Research Institute of Infectious Diseases
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DRUG SHOWS PROMISE FOR EBOLA VIRUS TREATMENT IN PRIMATES

For the first time, scientists have successfully treated monkeys infected with the deadly Ebola virus. Ebola causes hemorrhagic fever that kills up to 80 percent of humans infected with the virus.

These findings, published in the December 13th issue of THE LANCET, represent an important step in the search for a treatment strategy for Ebola. Currently no effective therapies are available.

In the study, Thomas W. Geisbert and colleagues from the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) injected 12 rhesus macaques with Ebola virus. Nine of the animals received a drug called recombinant nematode anticoagulant protein c2 (rNAPC2), while the remaining three were untreated.

In the treatment group, monkeys received rNAPC2 either immediately after Ebola infection, or 24 hours later, and continued to receive it daily for up to fourteen days. Three of the nine monkeys survived, and death was slowed by several days in the remaining six. All three untreated animals died.

Previous attempts to use antiviral drugs to treat Ebola have demonstrated success in mice and guinea pigs, but not in primates. Geisbert's team approached the problem a different way—by focusing on the symptoms triggered by the virus, rather than the virus itself.

Ebola causes coagulopathy, or abnormal blood clotting, which ultimately leads to massive hemorrhage and death. Studies at USAMRIID suggest that macrophages, a type of white blood cell, play an important role in this process. When a host is infected with Ebola virus, the macrophages express a clotting protein, called tissue factor, on their surfaces. These cells are then attracted to the blood as it flows through the body, forming localized clots that pave the way for abnormal bleeding.

Using rNAPC2, according to Geisbert, essentially blocks the harmful effects of tissue factor. The drug is already being evaluated to treat coronary problems, and has a demonstrated pharmacokinetic and safety profile in humans.

“Our results have potentially important clinical implications, since our treatment approach targets the disease process rather than replication of the Ebola virus,” he said. “Moreover, our findings raise the possibility that rNAPC2 could be useful in the treatment of other viral hemorrhagic fevers. The next step will be to test clinical efficacy of this treatment modality in persons at risk for the disease.”

Erik A. Henchal, commander of USAMRIID, commented that Institute scientists continually develop and evaluate a full spectrum of medical products to counter highly hazardous diseases.

“This promising research demonstrates our commitment to efficiently leverage products developed in the pharmaceutical industry and apply them to military and public health problems with our federal partners in the Department of Health and Human Services,” he said. “The discovery of this drug adds to our armamentarium of candidate vaccines and medical diagnostics that can be used to limit the public health impact of hemorrhagic fevers.”

Study collaborators were Lisa E. Hensley, Peter B. Jahrling, Tom Larsen, Joan B. Geisbert, and Jason Paragas of USAMRIID; Howard A. Young of the National Cancer Institute; Terry M. Fredeking of Antibody Systems; and William E. Rote and George P. Vlasuk of Corvas International.

USAMRIID, located at Fort Detrick, Maryland, is the lead laboratory for the Medical Biological Defense Research Program, and plays a key role in national defense and in infectious disease research. The Institute’s mission is to conduct basic and applied research on biological threats resulting in medical solutions (such as vaccines, drugs and diagnostics) to protect the warfighter. USAMRIID is a subordinate laboratory of the U.S. Army Medical Research and Materiel Command.

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