

Researchers develop a new drug to combat the measles

April 16 2014

A novel antiviral drug may protect people infected with the measles from getting sick and prevent them from spreading the virus to others, an international team of researchers says.

Scientists from the Institute for Biomedical Sciences at Georgia State University, the Emory Institute for Drug Development and the Paul-Ehrlich Institute in Germany developed the [drug](#) and tested it in animals infected with a [virus](#) closely related to one that causes the [measles](#). As reported in the current issue of the journal *Science Translational Medicine*, virus levels were significantly reduced when infected animals received the drug by mouth. The drug also prevented the animals from dying of the disease.

This drug, one that can be produced cost-effectively, stockpiled and administered by mouth, could boost eradication efforts by rapidly suppressing the spread of the virus during local outbreaks.

Despite major progress in controlling the measles worldwide, annual measles deaths have remained constant at around 150,000 since 2007, and there has been a resurgence of the virus in European countries where it had been considered controlled. The reasons for this are the highly infectious nature of the virus and insufficient vaccine coverage, which in the developed world is mostly due to parents opting not to vaccinate their children.

Dr. Richard Plemper, from the newly founded Institute for Biomedical

Sciences at Georgia State University, and his colleagues at the Emory Institute for Drug Discovery (EIDD) have developed a drug, termed ERDRP-0519, which blocks the replication of the pathogen.

"We are delighted to see our long-standing collaboration with Dr. Plemper and his team at the GSU IBMS come to fruition, and we look forward to continuing to leverage the medicinal chemistry and [drug development](#) capabilities at the EIDD in this and future collaborations with his group," said Dr. Michael Natchus, director of operations at the EIDD.

In collaboration with Dr. Veronika von Messling from the Paul-Ehrlich-Institute, the researchers tested the drug by turning to a virus very closely related to measles virus, the canine distemper virus, which causes a highly lethal infection in ferrets. All of the animals treated with ERDRP-0519 survived infection with the distemper virus, remained disease free and developed robust immunity against the virus.

Dr. Plemper said the drug could be used to treat friends, family and other social contacts of a person infected with [measles virus](#), who have not developed symptoms yet but are at risk of having caught the disease.

"The emergence of strong antiviral immunity in treated animals is particularly encouraging, since it suggests that the drug may not only save an infected individual from disease but contribute to closing measles immunity gaps in a population," Dr. Plemper said.

The researchers emphasize the drug is not intended as a substitute for vaccination, but as an additional weapon in a concerted effort to eliminate the measles.

As experienced with many antiviral drugs, the virus can become resistant against this inhibitor. The investigators have examined the issue of viral

escape and found that resistant viruses were in most cases less virulent. Equally important, the researchers observed that transmission of the resistant viruses between animals was impaired compared to the parent strain. These results are promising because they indicate resistance is unlikely to rapidly become widespread in the virus population.

While the drug is very encouraging thus far, additional research is needed before it could be considered for use in humans.

More information: Krumm SA, Yan D, Hovingh E, Evers TJ, Enkirch T, Reddy GP, Sun A, Saindane MT, Arrendale RF, Painter G, Liotta DC, Natchus MG, von Messling V, Plemper RK (2014). Orally Available Small-Molecule Polymerase Inhibitor Cures a Lethal Morbillivirus Infection. *Science Translational Medicine*, 2014.

Provided by Georgia State University

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