

## **Researchers identify chemical compound that inhibits Ebola virus**

March 28 2018, by Latina Emerson



Ebola virus. Credit: NIAID

An organic chemical compound shows effective antiviral activity against Ebola virus and several other viruses, according to a study led by Georgia State University.

The researchers found benzoquinoline inhibited the ability of Ebola <u>virus</u> to multiply and reproduce in cell culture. The findings are



published in the journal Antiviral Research.

Ebola virus, a member of the filovirus family, is an enveloped, singlestranded RNA virus that causes severe disease in humans. The largest outbreak on record for the filovirus family was caused by Ebola virus in West Africa between 2013 and 2016, resulting in more than 28,000 infections and more than 11,000 deaths.

Only experimental treatments were available, and survivors, including health care workers, are at risk for persistent infections from the virus remaining in sites that can tolerate foreign substances without eliciting an inflammatory immune response, such as the eye and testes. There are no approved drugs to treat Ebola virus or other filovirus infections, so there is a critical need for new therapeutic approaches. A potential antiviral target is the viral machinery and activities involved in carrying out RNA synthesis for Ebola virus.

"This work provides a foundation for the development of novel antiviral agents to combat Ebola virus," said Dr. Christopher Basler, director of the Center for Microbial Pathogenesis and professor in the Institute for Biomedical Sciences at Georgia State and a Georgia Research Alliance Eminent Scholar in Microbial Pathogenesis.

In this study, the researchers screened a library of 200,000 small molecule compounds to identify potential inhibitors of Ebola virus RNA synthesis. They identified 56 hits that inhibited Ebola virus activity by more than 70 percent, while showing less than a 20 percent chance of being toxic to cells. They discovered three chemical structures with potent antiviral activity against Ebola virus in cell culture.

Human lung epithelial cells and human embryonic kidney cells were exposed to several viruses, Ebola virus, Marburg virus, vesicular stomatitis virus and Zika virus, and the antiviral effects of the three



chemical structures were observed.

One of these <u>chemical structures</u>, benzoquinoline, showed <u>antiviral</u> <u>activity</u> against Ebola virus and was also active against another deadly filovirus, Marburg virus. Benzoquinoline was also effective against <u>vesicular stomatitis virus</u> from the rhabdovirus family, which can infect insects, cattle, horses and pigs, and Zika virus, which is spread to humans by mosquitoes.

"This study is part of a larger effort to find new therapies to treat highly dangerous Ebola virus infections," said lead author Dr. Priya Luthra of Georgia State.

**More information:** Priya Luthra et al. A high throughput screen identifies benzoquinoline compounds as inhibitors of Ebola virus replication, *Antiviral Research* (2017). DOI: 10.1016/j.antiviral.2017.12.019

Provided by Georgia State University

Citation: Researchers identify chemical compound that inhibits Ebola virus (2018, March 28) retrieved 2 May 2024 from https://medicalxpress.com/news/2018-03-chemical-compound-inhibits-ebola-virus.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.