

Ebola immunisation possible with just one injection

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A live vaccine based on the "Vesicular Stomatitis Virus" (VSV) has yielded highly promising results for the rapid development of an effective vaccine against the Ebola virus. This vaccine would only need to be injected once for long-lasting immunoprotection. These are the key findings of an international study coordinated by the World Health Organisation (WHO) in which the MedUni Vienna also played an important role. In this context, Markus Müller, Vice Rector for Research and Head of the University Department of Pharmacology, is acting within the VEBCON study consortium as head of the "Data Safety Monitoring Board" and is therefore jointly responsible for checking the vaccine's safety.

Michael Ramharter especially, co-author of the study published in the *New England Journal of Medicine*, from the University Department of Internal Medicine I at the MedUni Vienna, is also involved. He has worked for 15 years at the Centre de Recherches Médicales de Lambaréné at the Albert Schweitzer Hospital in Lambaréné in the Central African country of Gabon (headed by Peter G. Kremsner) as head of the scientific working group entitled "Infectious Disease Control Group", which was involved in the carrying out of this first phase I Ebola vaccination study in Africa. The international partners include Vienna and Lambaréné as well as a centre in Kenya, together with the university hospitals of Hamburg, Tübingen and Geneva.

Ebola antigen being inserted as a "Trojan horse"

"An Ebola glycoprotein from the Ebola strain in Zaire is being inserted into the VSV live vaccine", explains Ramharter: "While VSV only causes mild symptoms in humans, the protein acts as an Ebola antigen and triggers the formation of antibodies against the disease in the immune system." These antibodies hide, almost like a "Trojan horse", in the body in order to - successfully - fight the Ebola virus if the individual becomes infected: "Just one vaccine has conferred one hundred per cent protection against Ebola in the initial trials on primates", says Ramharter.

As part of the phase I study which is now complete and the results of which were published in the highly respected journal *New England Journal of Medicine* on Wednesday (yesterday), 138 test subjects - healthy adults - were vaccinated with various doses of the live vaccine. The results are highly promising: "The [vaccine response](#) is very reliable, the vaccine itself is safe and its tolerability is acceptable", says Ramharter. The most significant side effect was found to be temporary joint pain and inflammation reported among a small group of test subjects, particularly in the European centres.

In the phase II studies that are now starting, the vaccine will be used in patients living in the areas currently most badly affected by Ebola - especially Guinea and Sierra Leone, but also in Liberia. The first case of Ebola was reported in West Africa around 15 months ago. According to estimates, around 25,000 people have been infected by the virus, with more than 10,000 of them having died since as a result of this serious illness.

More information: "rVSV EBOLA vaccine: phase I trials in Africa and Europe." *NEJM*, April 1, 2015. [DOI: 10.1056/NEJMoa1502924](https://doi.org/10.1056/NEJMoa1502924).

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