



Plant Based Vaccine and Drug Remedies for Ebola Virus

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ABSTRACT

Filo viruses (Ebola and Marburg viruses) are responsible for severe and often fatal hemorrhagic fever in humans and nonhuman primates, with a 90% fatality rate. There are currently six species in the genus *ebolavirus*: *Zaire ebolavirus* (EBOV), *Sudan ebolavirus*, *Reston Ebola virus*, *Ta Forest ebolavirus*, *Bundibugyo ebolavirus*, and *Bombali ebolavirus*. The virus damages the immune system and organs as it spreads through the body, causing the other symptoms of hemorrhagic fever—fever, headache, muscle pain, weakness, vomiting, and diarrhea. It eventually causes a decrease in the number of blood-clotting cells. As the disease progresses, it causes internal bleeding as well as bleeding from the eyes, ears, and nose. Some people vomit or cough up blood, experience bloody diarrhea, and develop a rash. This causes severe and uncontrollable bleeding. The Ebola and Marburg viruses both live in animal hosts. Infected animals can transmit viruses to humans.

Keywords: Influenza; Immune protection; RNA virus; Vaccine; Immunology

DESCRIPTION

Transmission and symptoms

Following the initial transmission, the viruses can spread from person to person *via* contact with bodily fluids or contaminated items such as infected needles. Ebola is not as contagious as other viruses such as colds, influenza, or measles. It is transmitted to humans through contact with the skin or bodily fluids of an infected animal, such as a monkey, chimp, or fruit bat. Ebola cannot be contracted through the air, water, or food. A person who has Ebola but is asymptomatic cannot spread the disease. There is currently no approved human drug or vaccine, and treatment is almost entirely reliant on supportive therapy. Vaccines stimulate antibody production in humans and animals and provide immune protection against a variety of diseases.

Plant based vaccine

Plant-based vaccine technologies entail various methods of integrating the desired genes encoding the antigen protein for a specific disease into the genome of plant tissues. Tobacco, a plant

notorious for causing health issues, is now aiding in the fight against and even preventing the spread of the Ebola virus. Functional immune-gens and the development of genetically engineered plants expressing the antigen or the establishment of viral vector-based platforms for transient expression, estimation of yields and antigenic properties of the target antigen, and evaluation of immunogenic potential EBOV is an enveloped, single-stranded RNA virus with a negative sense. EBOV's genome encodes seven proteins. Several vaccines and antibodies based on EBOV GP are being developed, including viral vaccines and subunit GP vaccines, virus-like particles and multiple recombinant monoclonal antibodies. Before being transferred into the expression system, the target sequence of the chosen antigen is integrated with the vector. Depending on where the transgene has been inserted in the cells, the transgene can then be expressed in the plants using either a stable transformation system or a transient transformation system. The transient transformation system produces the desired protein or antigen shortly after the heterologous gene resides transiently in the host cells. The transgene isn't integrated into

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the genome of the plant cells. In this plant expression system, the regeneration of the entire plant is not required and the frequency of its prevalence is higher.

Drug remedies

There are drug remedies that have been approved for treating Ebola. Odesivimab-ebgn (atoltivimab, and maftivimab). Ansuvimab-

zykl (Ebanga) is a monoclonal antibody given as an injection. This research showed that the vaccine routine is secure and will result in an immune reaction in opposition to the Ebola virus. Plant-based vaccines are a new type of vaccine with a higher therapeutic value for treating many human and animal diseases and transient gene expression can be obtained based on the gene delivery methods used.