



Advancement of Dengue Virus Vaccine: Progress and Challenges

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The dengue virus (DENV), which causes dengue, infects 100 to 300 million people globally each year [1]. *Aedes aegypti* mosquitoes carry the Dengue virus, which causes dengue fever, which is still a serious global health risk, particularly in tropical and subtropical areas. Since there are now no targeted antiviral therapies and due to difficulties with traditional vector control techniques, the focus has shifted to developing vaccines as the main preventive measure. In order to create a variety of vaccination forms, including live attenuated, recombinant subunit, inactivated virus, viral vectored, DNA, and mRNA vaccines, scientists have targeted E protein and NS1.

An important advancement in the fight against Dengue fever has been the development of vaccinations that are able to neutralize all four serotypes. But there are obstacles such as lack of vaccine effectiveness against specific serotypes, side effects produced by vaccine in progeny and vaccine-induced immunological enhancement (ADE). Immunization can lessen the burden on healthcare systems, lower the number of hospitalizations caused by dengue, and help stop outbreaks.

The development and implementation of dengue vaccine research are significantly accelerated by international cooperation, public-private partnerships, and regulatory cooperation. Effective programs show how crucial it is to work together to combat dengue fever on a worldwide scale. The difficulties involved in developing a dengue vaccine, ongoing funding, campaigning, and research are crucial. There are several viable approaches to increase the efficacy and accessibility of the Dengue vaccine, including cross-disciplinary cooperation, novel vaccination platforms, and emerging technology.

In conclusion, overcoming obstacles unique to each serotype, embracing creative approaches to vaccine design, and negotiating scientific intricacies are all necessary steps on the path to developing successful Dengue virus vaccines. The convergence of state-of-the-art technologies, computational modeling, and cooperative research endeavors can potentially realize the objective of vaccination-based comprehensive dengue prevention.

REFERENCES

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