

Novel recombinant JEV vaccine

Japanese Encephalitis (JE) is a viral disease, which infects humans and animals. The disease is caused by a mosquito-borne flavivirus named Japanese Encephalitis Virus (JEV). The disease is endemic in Asian countries but with rapid globalization and climate shift it is emerging in areas where the disease was previously unknown. There is no specific treatment for JE. The current treatment is supportive and focuses on alleviating severe clinical symptoms to assist the patient to overcome the infection. Vaccination is one of the most successful methods to prevent JE infection. Number of vaccines have been developed for JEV and has helped in significantly controlling the infection in many countries. The initial mouse brain derived vaccines were effective but due to adverse reactions and lack of consistency have been replaced with recent inactivated or live attenuated cell culture based vaccines in recent years.

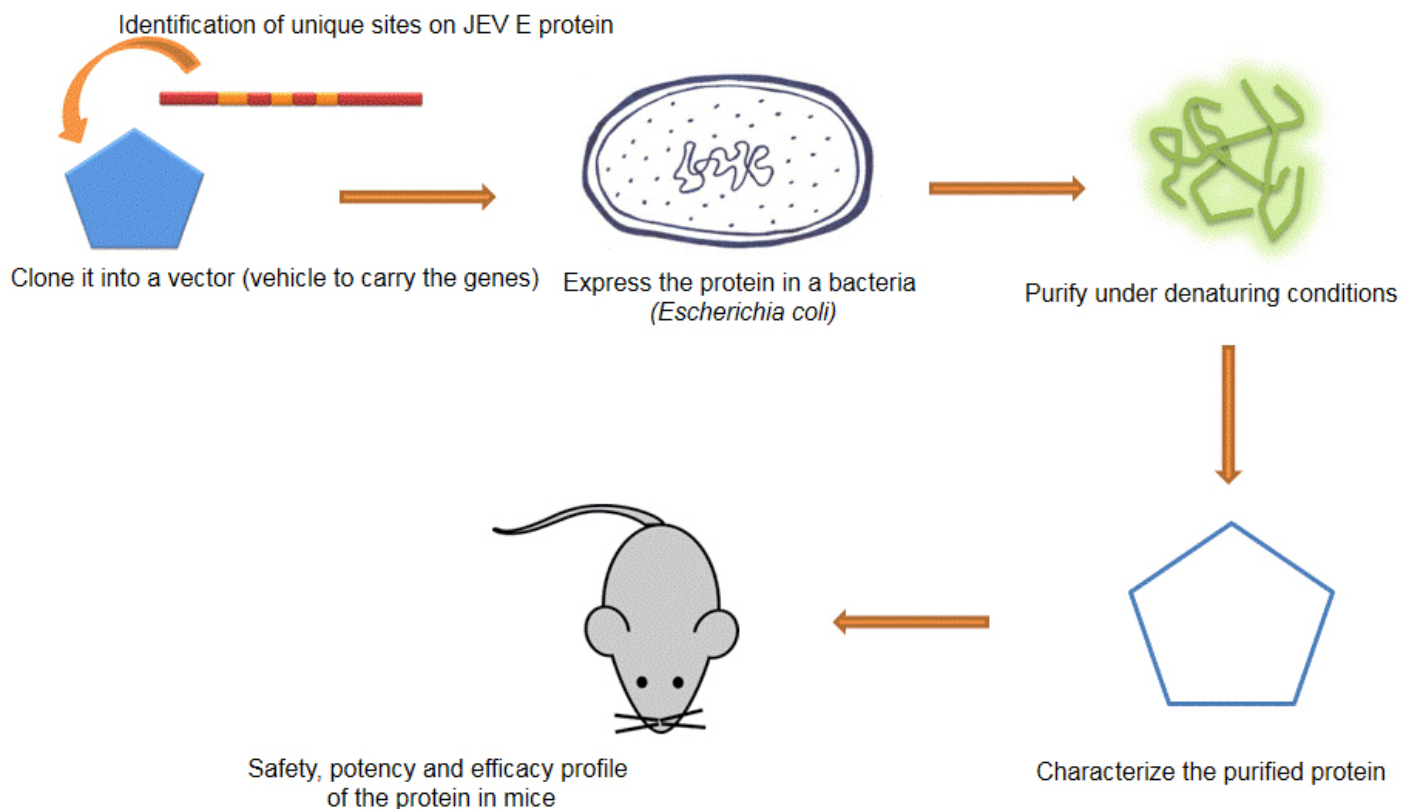


Fig. 1. Schematic representation of development of a novel JEV vaccine.

The present work is an extension of the current strategy of developing cell culture based safe vaccines and utilizing a novel platform of plant viral Physalis Mottle Virus Coat protein for constructing a potential JE vaccine candidate. The study entails constructing a fusion protein of

Physalis Mottle Virus Coat protein and unique sites of immunodominant epitopes of envelop protein (E) of JEV. The resulting chimeric protein was expressed and purified as virus like particles (VLPs). Physicochemical characterization of the VLPs was undertaken and they were found to show well defined spherical particles under transmission electron microscope with particle size of 28 ± 3 nm. The immunogenicity of the VLPs was also tested in mice and safety, efficacy and potency was found to be comparable with the available commercial inactivated vaccine.

This vaccine candidate may provide a newer option for development of a safe and effective vaccine against JEV infection and also provides a novel platform for development of other viral vaccines.

Publication

[Efficient production of Tymovirus like particles displaying immunodominant epitopes of Japanese Encephalitis Virus envelope protein.](#)

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