

Recombinant Japanese Encephalitis Virus VLP

Cat. No. JAP-473 **Lot. No.** (See product label)

SPECIFICATION

Product Overview

Recombinant Japanese encephalitis VLP (virus-like particles) produced in HEK293 cells and purified from culture supernatant.

Background

The Japanese encephalitis virus (JEV) is a flavivirus and is related to the West Nile Virus. JEV is the main cause of viral encephalitis in many countries of Asia with an estimated 68 000 clinical cases every year (WHO). Although symptomatic Japanese encephalitis (JE) is rare, the case-fatality rate among those with encephalitis can be as high as 30%. Permanent neurologic or psychiatric sequelae can occur in 30%–50% of those with encephalitis. Flaviviruses are positive-stranded RNA viruses with a 9-12- kb genome that is translated as a single polyprotein and then cleaved by host and viral proteases into structural capsid (C), premembrane (prM), envelope (E) proteins and seven nonstructural proteins. Capsid binds to viral RNA to form a nucleocapsid that is enveloped by an endoplasmic reticulum-derived membrane containing E and prM. E proteins are responsible for cellular attachment and possess a hydrophobic loop that mediates fusion of viral and host membrane. The E protein is therefore the primary target of neutralizing antibodies.

VLPs are often spontaneously produced during Flavivirus infection and they can also be produced recombinantly using different expression systems (Kümmerer, 2006). VLPs are produced as a noninfectious recombinant antigens and expressed as extracellular particles. Studies have shown that gradient-purified JEV particles exhibit hemagglutination activity at the same pH optimum (6.6) as Japanese encephalitis virus. IgM and IgG ELISA have also shown that recombinantly produced JEV VLPs perform similarly to Japanese encephalitis virus-infected mouse brain antigen for the analysis of serum samples from patients with symptoms of acute encephalitis (Hunt et

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al. 2001).

Many diagnostic reagents and vaccines targetting viral diseases are produced using infectious agents, making them costly and hazardous to manufacture. However, recombinant DNA technology, makes it possible to bypass these problems by synthesizing viral immunogens and antigens in vitro. To be viable, the immunologically relevant viral components must be produced in an authentic form, which often require the recombinant expression system to duplicate the posttranslational processing pathways that contribute to viral antigen formation. These posttranslational events in antigen formation may be particularly important in the synthesis of envelope glycoprotein structures, especially those that are heterodimeric (Konishi et al., 2001). This Japanese Encephalitis Virus VLP has been manufactured using mammalian cells to meet the need for a highly purified, concentrated protein for use in vaccine research and serological based diagnostic products.

Formulation	Dulbecco's phosphate buffered saline pH7.4, sterile filtered.
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Type	Recombinant
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ClassID 1	Infectious Disease
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GENE INFORMATION

Synonyms	Japanese Encephalitis Virus VLP
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