

Japanese Encephalitis Virus (JEV)

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In news- Recently, National Institute of Animal Biotechnology (NIAB), Hyderabad has found Non-Structural 1 protein, a potential diagnostic biomarker for Japanese encephalitis virus.

Key updates-

- Since there is no cure available for JEV, early detection is essential to mitigate a breakout.
- **NIAB, Hyderabad developed Fluorine Doped Tin Oxide (FTO) electrode fabricated with reduced Graphene Oxide (rGO) for as an electrochemical based immunosensor** for the rapid, sensitive and specific detection of the Non-Structural 1 (NS1) secretory protein, which is suitable biomarker for JEV found circulating in the blood.
- **Since the conventional methods for JEV diagnosis are expensive, more hazardous** and time-consuming diagnostic techniques and require an elaborate laboratory set up and trained expertise, the developed biosensor may be able to overcome these limitations.
- **Detection of the NS1 instead of antibody has an added advantage** since the antigen is present from day 1 of the infection and hence facilitates early detection.
- On the other hand, antibodies appear only after Day 4/5 of the infection.

About Japanese encephalitis virus (JEV)

- It is a **mosquito-borne flavivirus (mosquitos of the Culex species)**, and belongs to the same genus as dengue, yellow fever and West Nile viruses.
- The first case of **JEV was documented in 1871 in Japan.**
- JEV is the most important cause of viral encephalitis in

Asia.

- Most **JEV infections are mild (fever and headache) or without apparent symptoms**, but approximately 1 in 250 infections results in severe clinical illness.
- The **incubation period is between 4-14 days**.
- **In children, gastrointestinal pain and vomiting** may be the dominant initial symptoms.
- **Severe disease is characterized by rapid onset of high fever, headache, neck stiffness, disorientation, coma, seizures, spastic paralysis and ultimately death.**
- The case-fatality rate can be as high as 30% among those with disease symptoms.
- There is **no cure for the disease**.
- Treatment is focused on relieving severe clinical signs and supporting the patient to overcome the infection.
- Safe and effective vaccines are available to prevent JE.
- 24 countries in the WHO South-East Asia and Western Pacific regions have endemic JEV transmission, exposing more than 3 billion people to risks of infection.

Further reading:
<https://journalsofindia.com/acute-encephalitis-syndrome-aes-2/>