International Journal of Veterinary Sciences and Animal Husbandry 2018; 3(3): 10-11


**ISSN:** 2456-2912
VET 2018; 3(3): 10-11

www.veterinarypaper.com
Received: 04-03-2018
Accepted: 05-04-2018

**Subha Ganguly**
Associate Professor, Department of Veterinary Microbiology, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

**Sunita**
Assistant Professor, Department of Veterinary Microbiology, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

**Vikas Kumar**
Assistant Professor, Department of Veterinary Anatomy and Histology, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

**Nileshkumar Pagrut**
Associate Professor, Department of Veterinary Pathology, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

**Neelam Kumari Faran**
Assistant Professor, Department of Veterinary Parasitology, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

**Shweta Choudhary**
Assistant Professor, Department of Livestock Production Management, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

**Correspondence**
**Subha Ganguly**
Associate Professor, Department of Veterinary Microbiology, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

# Zika virus and its pathogenic effect on human beings: A review

**Subha Ganguly, Sunita, Vikas Kumar, Nileshkumar Pagrut, Neelam Kumari Faran and Shweta Choudhary**

**Abstract**
Zika virus (ZIKV) is a member of the Family *Flaviviridae*. The virus spreads through mosquitoes, like *Aedes aegypti* and *A. albopictus*. The virus was isolated in 1947 and the virus is derived from the Ziika Forest of Uganda. The virus is antigenically related to the dengue, yellow fever, Japanese encephalitis, and West Nile viruses.
Zika virus causes Zika fever which causes only mild symptoms as similar to the dengue fever.

**Keywords:** *Flavivirus*, Pathogenesis, RNA virus, Zika fever

## Introduction
Zika virus has non-segmented single-stranded positive sense RNA genome which is enveloped and the nucleocapsid is having the icosahedral symmetry [1].

## Transmission and spread of infection
The primary hosts are the monkeys and the virus remains enzootic in nature in the mosquito-monkey-mosquito cycle with only occasional transmission to humans. *A. aegypti* mosquitoes are primarily responsible for the spread of Zika virus infection and the virus can also be transmitted by sexual contacts and through unsafe blood transfusions [1].
The female *A. aegypti* mosquitoes are responsible for the primary spread of the Zika virus infection which mostly remains active during the day time and feed on human blood. Apart from this, the virus is also isolated from a number of arboreal mosquito species in the genus *Aedes*, such as *A. africanus*, *A. apicoargenteus*, *A. furcifer*, *A. hensilli*, *A. luteocephalus* and *A. vittatus*, with an extrinsic incubation period in mosquitoes of about 10 days [2].
Zika has been detected in many more species of *Aedes*, along with *Anopheles coustani*, *Mansonia uniformis* and *Culex perfuscus* [1, 2].
The Zika virus remains infectious for around 2 weeks when transmitted via semen and appears to be contagious via mosquitoes for around a week after infection.
The Zika virus can also spread by vertical transmission from the pregnant mother to the foetus during the pregnancy and/or delivery [3].

## Pathogenesis
The virus replicates in the midgut epithelial cells of the mosquitoes followed by its salivary glands. The virus can be recovered from the mosquito's saliva after about 5-10 days period. If the mosquito's saliva is inoculated into human skin, the virus can infect epidermal keratinocytes, skin fibroblasts in the skin and the Langerhans cells. The virus can cause pathogenic lesions in the lymph nodes and the infection becomes systemic [4].
The zika virus produces the illness called zika fever in human beings. Symptomatically it resembles dengue fever. The symptoms include fever, red eyes, joint pain, headache, and a maculopapular rash which lasts for less than seven days. Infection in pregnant women causes microcephaly and related cerebral malformations in newborn babies. Infection in adults has been linked to Guillain–Barré syndrome (GBS) [5].

**Diagnosis**

By testing the blood, urine, or saliva derived from the sick persons for the presence of Zika virus RNA [6].

**Prevention**

It includes the control of mosquito population in dwelling areas by preventing the existence of stagnant water, using mosquito nests and repellants. No effective vaccine is available till date against the infection. There is no specific treatment against Zika fever. Only symptomatic treatment is achieved by using paracetamol (acetaminophen) and patient rest is advisable [7].

**Development of vaccine**

The World Health Organization (WHO) is giving priority to the development of inactivated vaccines and other non-live vaccines, which are safe to use in pregnant women too [7].

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