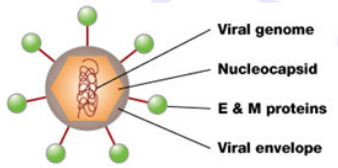
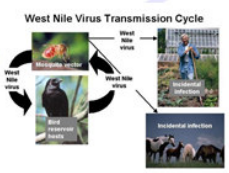
# West Nile Virus (WNV) Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

**West Nile virus (WNV)** is a mosquito-borne zoonotic arbovirus belonging to the genus Flavivirus in the family Flaviviridae. This flavivirus is found in temperate and tropical regions of the world. It was first identified in the West Nile subregion in the East African nation of Uganda in 1937. WNV is now considered to be an endemic pathogen in Africa, Asia, Australia, the Middle East, Europe and in the United States, which in 2012 has experienced one of its worst epidemics. The main mode of WNV transmission is via various species of mosquitoes which are the prime vector, with birds being the most commonly infected animal and serving as the prime reservoir host - especially passerines which are of the largest order (Passeriformes) of birds. Symptoms may include fever, headaches, fatigue, muscle pain or aches, malaise, nausea, anorexia, vomiting, myalgias and rash. People of advanced age, the very young, or those with immunosuppression, either medically induced, such as those taking immunosupressive drugs, or due to a pre-existing medical condition such as HIV infection, are most susceptible. The specific neurological diseases which may occur are West Nile encephalitis, which causes inflammation of the brain, West Nile meningitis, which causes inflammation of the meninges which are the protective membranes that cover the brain and spinal cord, West Nile meningoencephalitis, which causes inflammation of the brain and also the meninges surrounding it, and West Nile poliomyelitis - spinal cord inflammation which results in a syndrome similar to polio, which may cause acute flaccid paralysis.






WNV is one of the Japanese encephalitis antigenic serocomplex of viruses. The genetic material of WNV is a positive-sense, single strand of RNA, which is between 11,000 and 12,000 nucleotides long; these genes encode seven nonstructural proteins and three structural proteins. The RNA strand is held within a nucleocapsid formed from 12-kDa protein blocks; the capsid is contained within a host-derived membrane altered by two viral glycoproteins. Preliminary diagnosis is often based on the patient's clinical symptoms, places and dates of travel (if patient is from a non-endemic country or area), activities, and epidemiologic history of the location where infection occurred. Preliminary diagnosis is often based on the patient's clinical symptoms, places and dates of travel (if patient is from a non-endemic country or area), activities, and epidemiologic history of the location where infection occurred. Definitive diagnosis of WNV is obtained through detection of virus-specific antibody Immunoglobulin M (IgM/IgG) antibodies by ELISA.



**WNV Vaccine**: Currently, no vaccine against WNV infection is available for humans. There are some vaccines available for veterinary us. A vaccine for horses (ATCvet code: QI05AA10; ) based on killed viruses exists; some zoos have given this vaccine to their birds, although its effectiveness is unknown. Some animal vaccines use inactivated WNV (K-WN/**WNV-Innovator**, Fort Dodge; Pfizer) alone or in combination with Tetanus or encephalitis. **Equine Recombitek rWNV vaccine** (Merial) consists of a canarypox virus vector with insertion and expression of the membrane (**prM**) and envelope (**E**) proteins of WNV. The latest equine vaccine approved in 2006 is a single-dose, attenuated **West Nile virus, live flavivirus chimera vaccine (WN-FV)** (PreveNile; Intervet, De Soto,KS) for horses and is marketed without an adjuvant. The recombinant chimera expresses the E and prM proteins of WNV in a yellow fever vector (YF17D). The vaccine has been labeled for use in horses for the prevention of West Nile virus viremia and as an aid in the prevention of WNV disease and encephalitis. Typically, efficacy of the vaccine has been followed by the protection of the horses or other animals from live virus challenge. In some studies the antibody neutralization tests were performed but no specific antibodies tests (ELISA) were perform to measure the antibody titer to the Envelop or the prM-proteins.

ADI has developed antibody ELISA kits to determine the efficacy of WNV vaccines. Antibody tests are available for the envelop and prM protein of the WNV. to Recombinant proteins and antibodies to WNV are also available to facilitate research on WNV vaccine. A novel recombinant WNV fusion protein (Capsid+prM+Envelop) protein has been cloned, expressed, and purified. This fusion protein invoked very string antibody response than achieved with the WNV whole virus or DNA vaccines. Recombinant WNV subunit-vaccine is being tested by ADI as a potential human vaccine candidate.

## West Nile Virus Related ELISA kits

| Items Description | Species | Antibody Type IgG Cat# | Antibody Type IgM Cat# |
|---|---|---|---|
| **West Nile Virus Mosaic Proteins Vaccine (Capsid+prM+Envelop) Antibody ELISA kits** | Mouse | 910-210-WNG | 540-110-DHM |
| | Horse | 910-310-WNG | 910-320-WNG |
| | Human | 910-410-WNG | 910-420-WNG |
| **West Nile Virus prM Vaccine Antibody ELISA kits** | Mouse | 910-230-WNG | 910-240-WNG |
| | Horse | 910-330-WNG | 910-340-WNG |
| | Human | 910-430-WNG | 910-440-WNG |
| **West Nile Virus Envelop Vaccine Antibody ELISA kits** | Mouse | 910-250-WNG | 910-260-WNG |
| | Horse | 910-450-WNG | 910-460-WNG |
| | Human | 910-430-WNG | 910-440-WNG |



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