Rabies

Catalog number

R0012-03

Supplier

United States Biological

The rabies virus is the type species of the Lyssavirus genus, in the family Rhabdoviridae, order Mononegavirales. Lyssaviruses have helical symmetry, with a length of about 180 nm and a cross-section of about 75nm. These viruses are enveloped and have a single-stranded RNA genome with negative sense. The genetic information is packed as a ribonucleoprotein complex in which RNA is tightly bound by the viral nucleoprotein. The RNA genome of the virus encodes five genes whose order is highly conserved: nucleoprotein (N), phosphoprotein (P), matrix protein (M), glycoprotein (G), and the viral RNA polymerase (L).

Once within a muscle or nerve cell, the virus undergoes replication. The trimeric spikes on the exterior of the membrane of the virus interact with a specific cell receptor, the most likely one being the acetylcholine receptor. The cellular membrane pinches in a procession known as pinocytosis and allows entry of the virus into the cell by way of an endosome. The virus then uses the acidic environment of that endosome and binds to its membrane simultaneously, releasing its five proteins and single strand RNA into the cytoplasm.

The L protein then transcribes five mRNA strands and a positive strand of RNA all from the original negative strand RNA using free nucleotides in the cytoplasm. These five mRNA strands are then translated into their corresponding proteins (P, L, N, G and M proteins) at free ribosomes in the cytoplasm. Some proteins require post-translative modifications. For example, the G protein travels through the rough endoplasmic reticulum, where it undergoes further folding, and is then transported to the Golgi apparatus, where a sugar group is added to it (glycosylation).

Where there are enough proteins, the viral polymerase will begin to synthesize new negative strands of RNA from the template of the positive strand RNA. These negative strands will then form complexes with the N, P, L and M proteins and then travel to the inner membrane of the cell, where a G protein has embedded itself in the membrane. The G protein then coils around the N-P-L-M complex of proteins taking some of the host cell membrane with it, which will form the new outer envelope of the virus particle. The virus then buds from the cell. From the point of entry, the virus is neurotropic, traveling quickly along the neural pathways into the central nervous system, and then to other organs. The salivary glands receive high concentrations of the virus, thus allowing further transmission.

Applications

Suitable for use in ELISA. Other applications not tested.

Recommended Dilution

Optimal dilutions to be determined by the researcher.

Hybridoma

Sp2/0 myeloma cells with spleen cells from BALB/c mice.

Source

Ascites

Storage and Stability

May be stored at 4°C for short-term only. Aliquot to avoid repeated freezing and thawing. Store at -20°C. Aliquots are stable for 12 months. For maximum recovery of product, centrifuge the original vial after thawing and prior to removing the cap.

Immunogen

Purified rabies virus.

Formulation

Supplied as a liquid in PBS, pH 7.2, 0.09% sodium azide.

Purity

~90% pure. Purified by Protein A affinity chromatography.

Specificity

Recognizes glycoprotein of rabies virus.

Product Type

Mab

Isotype

IgG2a

Grade

Affinity Purified

Applications

E

Storage

-20°C

Reference

1. Macikova, I., et al., Common and different antigenic properties of the rabies virus glycoprotein of strains SAD-Vnukovo and Pitman-Moore. Acta. Virol. 36(6): 541-550 (1992).
2. Drew WL (2004). "Chapter 41: Rabies". In Ryan KJ, Ray CG (editors). Sherris Medical Microbiology (4th ed.). McGraw Hill. pp. 597–600. ISBN 0-8385-8529-9.
3. Finke S, Conzelmann KK (August 2005). "Replication strategies of rabies virus". Virus Res. 111 (2): 120–31. doi:10.1016/j.virusres.2005.04.004. PMID 15885837.