ALPHA DIAGNOSTIC INTERNATIONAL

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Product Specification Sheet

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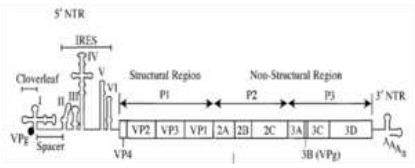
| ☐ Cat. # POLV15-S | Rabbit Anti-Poliomyelitis Virus 1 Viral Protein 1 (Sabin; POLV1-VP1) antiserum | **SIZE**: 100 ul |
| ☐ Cat. # POLV15-C | Recomb. Poliomyelitis Virus 1 VP1 (Sabin; POLV1-VP1) control for Western blot | **SIZE**: 100 ul |

Recombinant Poliomyelitis Virus 1 Viral Protein 1 (Sabin; POLV1-VP1) control for Western blot

**Poliomyelitis**, often called polio or infantile paralysis, is an acute viral infectious disease spread from person to person, primarily via the fecal-oral route. Spinal polio is the most common form, characterized by asymmetric paralysis that most often involves the legs. The term poliomyelitis is used to identify the disease caused by any of the three serotypes of poliovirus. Type 1 (Brunhilde): often with severe symptoms Type 2 (Lansing): with milder symptoms Type 3 (Leon): rare, but with severe symptoms. Antibodies to poliovirus can be diagnostic, and are generally detected in the blood of infected patients early in the course of infection.




Poliovirus is a human enterovirus and member of the family of Picornaviridae. It composed of an ss-positive sense **RNA genome** (~7500 nt) and a **protein capsid**. Because of its short genome and its simple composition—only RNA and a non-enveloped icosahedral protein coat that encapsulates it—poliovirus is widely regarded as the simplest significant virus. Poliovirus mRNA is translated as one long polypeptide. This polypeptide is then auto-cleaved by internal proteases into approximately 10 individual viral proteins, including: 3Dpol, an RNA dependent RNA polymerase; 2Apro and 3Cpro/3CDpro, proteases which cleave the viral polypeptide; VPg (3B), a small protein that binds viral RNA and is necessary for synthesis of viral positive and negative strand RNA; 2BC, 2B, 2C, 3AB, 3A, 3B proteins which comprise the protein complex needed for virus replication; VP0, VP1, VP2, VP3, VP4 proteins of the viral capsid. Capsid proteins VP1, VP2, VP3 and VP4 form a closed capsid enclosing the viral positive strand RNA genome. VP4 lies on the inner surface of the protein shell formed by VP1, VP2 and VP3. Together they form an icosahedral capsid (T=3) composed of 60 copies of each VP1, VP2, and VP3. The capsid interacts with human PVR at this site to provide virion attachment to target cell. Poliovirus capsid protein VP1 is one of four structural proteins and its antigenic The N-termini of most EV VP1 proteins contain highly conserved immunogenic regions that are recognized by sera from most EV-infected patients. Poliovirus VP1 has been considered a candidate for recombinant poliovirus subunit vaccine.

Poliovirus is structurally similar to other human enteroviruses (coxsackieviruses, echoviruses, and rhinoviruses), which also use immunoglobulin-like molecules to recognize and enter host cells. There are **three serotypes of poliovirus**, PV1, PV2, and PV3; each with a slightly different capsid protein. Capsid proteins define cellular receptor specificity and virus antigenicity. PV1 is the most common form encountered in nature, however all three forms are extremely infectious. Specific strains of each serotype are used to prepare **vaccines against polio**. **Inactive polio vaccine (IPV)** is prepared by formalin inactivation of three wild, virulent reference strains, Mahoney or Brunenders (PV1), MEF-1/Lansing (PV2), and Saukett/Leon (PV3). Oral polio vaccine (OPV) contains live attenuated (weakened) strains of the three serotypes of poliovirus. Passaging the virus strains in monkey kidney epithelial cells introduces mutations in the viral IRES, and hinders (attenuates) the ability of the virus to infect nervous tissue.

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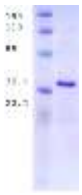
| **Antigen** | Rec. POLV1 VP1 protein (Sabine) |
| **Ab Host/type** | Rabbit antiserum (#POLV15-S). supplied in PBS/azide (0.05% is liquid or powder forms. Re-suspend powder in 100 ul water. Store frozen in suitable size aliquots. |
| **2-Ab** | Goat Anti-rabbit IgG-HRP cat # 20320 (AP, biotin, FITC conjugates also available) |
| **-ve** | # 20009-1, Rabbit (non-immune) IgG, purified, suitable for ELISA, Western, IHC as –ve control |

Poliovirus VP1 Sabin strain (protein accession #P03301, 1-301 aa) was expressed as his-tag protein in E. coli and purified (>95%, ~32 Kda). For Western blot +ve control (**Cat # POLV15-C**) is



supplied in SDS-PAGE sample buffer (reduced). Load 10 ul/lane of **POLV15**-C for good visibility with antibody Cat # **POLV15**-S. Store at –20oC in suitable size aliquots. SDS may crystallize in cold conditions. It should redissolve by warming before taking it rom the stock. It should be heated once prior to loading on gels. If the product has been stored for several weeks, then it may be preferable to add 5 ul of fresh 2x sample buffer per 10 ul of the **POLV15**-C solution prior to heating and loading on gels. This preparation is not biologically active. It is not suitable for ELISA or other applications where native protein is required. Do not freeze, thaw, or heat repeatedly.

## Recommended Usage

ELISA: Antibodies should be tested 1:500-1:2000 for Western and 1:1000-1:5000 for ELISA.

## Specificity & Cross-reactivity

POLV15-R (Human poliovirus 1 strain Sabin) capsid protein sequence is 77% conserved in POLV2-VP1 and 74% in POLV3-VP3. Most of the variations are found in the 1-30 aa regions of the VP1. Antibodies made to the polio vaccine recognize the POLV15-R protein. Antibodies made to POLV15-R also reacted with the poliovirus antigens 1-3. Antibody reactivity with the individual POLVP1, -2, 3 proteins or whole have virus has not been studies.

Reference: Nomoto A (1982) PNAS 79, 5793-5797; Hammerle T (1991) JBC 266, 5412-5416; Hogle J (2002) Ann. Rev. Micorbiol. 56, 677-702; Blatimore D (1981) PNAS 78, 4887-4894; Kitmaura N (1981) Nature 291, 547-553

**Related items available from ADI**

| | |
|---|---|
| 970-100-PHG | Human Anti-Poliomyelitis Virus 1-3 IgG ELISA |
| 970-120-PMG | Mouse Anti-Poliomyelitis Virus 1-3 IgG ELISA |
| 970-130-PRG | Rabbit Anti-Poliomyelitis Virus 1-3 IgG ELISA |
| 970-140-PRM | Rabbit Anti-Poliomyelitis Virus 1-3 IgM ELISA |
| 970-150-PMG | Monkey Anti-Polio Virus 1-3 IgG ELISA Kit, |

POLV11-S Anti-Poliomyelitis Virus 1-3 antiserum
POLV21-M Mouse monoclonal Anti-Polio Virus 1-3 IgG,
POLV13-A Anti-Poliomyelitis Virus 1-3 IgG
POLV13-BTN Anti-Polio Virus 1-3 IgG-Biotin Conjugate
POLV13-FITC Anti-Polio Virus 1-3 IgG-FITC Conjugate
POLV13-HRP Anti-Polio Virus 1-3 IgG-HRP Conjugate

POLV14-M Mouse monoclonal Anti-Poliomyelitis Virus 1 IgG, aff pure
POLV15-R-10 Recombinant (E. Coli) Poliomyelitis Virus 1 Viral Protein 1 (Sabin; POLV1-VP1, 302-aa; full length, >95%)
POLV15-S Anti-Poliomyelitis Virus 1 Viral Protein 1 (Sabin; POLV1-VP1) antiserum
POLV16-S Anti-Poliomyelitis Virus 1 (LSc,2ab strain) antiserum, neutralizing
POLV17-S Anti-Poliomyelitis Virus 1 (sabin strain, native) antiserum, neutralizing
POLV21-M Mouse monoclonal Anti-Poliomyelitis Virus 2 IgG, aff pure
POLV22-S Anti-Poliomyelitis Virus 2 (P712,Ch,2ab strain) antiserum, neutralizing
POLV23-S Anti-Poliomyelitis Virus 2 (sabin strain, native) antiserum, neutralizing
POLV31-M Mouse monoclonal Anti-Poliomyelitis Virus 3 IgG, aff pure
POLV32-S Anti-Poliomyelitis Virus 3 (Leon1,Ch,2ab strain) antiserum, neutralizing
POLV33-S Anti-Poliomyelitis Virus 3 (sabin strain, native) antiserum, neutralizing

POLV15-S 130705A

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