

Porcine Sapovirus, Cowden (Tissue Culture Adapted)

Catalog No. NR-50552

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Contributor and Manufacturer:

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Product Description:

Virus Classification: *Calciviridae, Sapovirus*

Species: Porcine Sapovirus

Strain: Cowden

Original Source: Porcine sapovirus (PSV), Cowden was isolated in Wayne County, Ohio, USA in 1988 from the large intestinal contents of a 27 day old diarrheic nursing pig,^{1,2} and adapted to growth in cell culture by serial passage in a continuous cell line in the presence of an intestinal content fluid filtrate from uninfected gnotobiotic pigs.³ The complete genome of tissue culture adapted PSV, Cowden has been sequenced (GenBank: [AF182760](#)).⁴

Comments: PSV, previously known as porcine enteric calcivirus (PEC), is a member of the family *Calciviridae*. *Calciviridae* are small non-enveloped, positive sense, single-stranded RNA viruses classified into five genera including noroviruses and sapoviruses. Noroviruses are the leading cause of nonbacterial gastroenteritis in humans, and sapoviruses are enteric pathogens affecting humans and swine. Sapoviruses are highly diverse and divided into many different genogroups.⁵ PSV, Cowden belongs to genogroup III and is one of only a few culturable enteric calciviruses. Bile acids are essential for *in vitro* propagation of PSV, and may act by a mechanism involving down-regulation of IFN-mediated STAT1 activation.⁶ Four amino acid substitutions in the capsid protein (VP1) have been identified as critical for the cell culture adaptation of the virus.⁷

Material Provided:

Each vial contains approximately 1 mL of clarified cell lysate and supernatant from *Sus scrofa* kidney epithelial cells infected with tissue culture adapted PSV, Cowden.

Note: If homogeneity is required for your intended use, please purify prior to initiating work.

Packaging/Storage:

NR-50552 was packaged aseptically in screw-capped plastic cryovials. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term

storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

Growth Conditions:

Host: *Sus scrofa* kidney epithelial cells (LLC-PK, ATCC® CL-101™)

Growth Medium: Eagle's Minimum Essential Medium with Earle's Balanced Salt Solution, non-essential amino acids, 2 mM L-glutamine, 1 mM sodium pyruvate, and 1500 mg/L sodium bicarbonate, 2% fetal bovine serum, 1% non-essential amino acids, and 50 µM bile acid (glycochenodeoxycholic acid).

Infection: Cells should be 80% to 90% confluent

Incubation: 4-5 days at 37°C and 5% CO₂

Cytopathic Effect: Cell rounding and detachment

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Porcine Sapovirus, Cowden (Tissue Culture Adapted), NR-50552."

Biosafety Level: 2

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmb15/index.htm.

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References:

1. Saif, L. J., Personal Communication.
2. Flynn, T. F. and Saif, L. J. "Serial Propagation of Porcine Enteric Calicivirus-Like Virus in Primary Porcine Kidney Cell Cultures." J Clin Microbiol. 26 (1988): 206-212. Pubmed: 2830305.
3. Parwani, A. V., et al. "Serial Propagation of Porcine Enteric Calicivirus in a Continuous Cell Line. Effect of Medium Supplementation with Intestinal Contents or Enzymes." Arch. Virol. 120(1991): 115-122. PubMed: 1929875.
4. Guo, M. et al. "Molecular Characterization of a Porcine Enteric Calicivirus Genetically Related to Sapporo-like Human Caliciviruses." J. Virol. 73(1999): 9625-9631. PubMed: 10516074.
5. Scheuer, K. A., et al. "Prevalence of Porcine Noroviruses, Molecular Characterization of Emerging Porcine Sapoviruses from Finisher Swine in the United States, and Unified Classification Scheme for Sapoviruses." J. Clin. Microbiol. 51 (2013): 2344-2353. PubMed: 23678065.
6. Chang, K-O., et al. "Bile Acids are Essential for Porcine Enteric Calicivirus Replication in Association with Down-Regulation of Signal Transducer and Activator of Transcription 1." Proc. Natl. Acad. Sci. USA 101 (2004): 8733-8738. Pubmed: 15161971.
7. Lu, Z., et al. "Mechanism of Cell Culture Adaptation of an Enteric Calicivirus, the Porcine Sapovirus Cowden Strain." J. Virol. 90 (2015): 1345-1358. Pubmed: 26581980.

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