Product Information Sheet for NR-28801

Salmonella enterica subsp. *enterica*, Strain SL491 (CVM36357) (Serovar Virchow)

Catalog No. NR-28801

For research use only. Not for human use.

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Manufacturer:
BEI Resources

Product Description:
Bacteria Classification: *Enterobacteriaceae*, *Salmonella*
Species: *Salmonella enterica*
Subspecies: *Salmonella enterica* subsp. *enterica*
Serovar: Virchow
Strain: SL491 (also referred to as strains CVM36357 and AM23818-B)[1,2]
Original Source: *Salmonella enterica* (*S. enterica*) subsp. *enterica*, strain SL491 (CVM36357) was isolated in 2005 from an infected patient in Connecticut, USA. Prior to the onset of illness, the patient had visited a farm in India and had exposure to farm animals.[1]
Comments: Strain SL491 (CVM36357) is reported to be a multi-drug resistant strain.[1] The complete genome for *S. enterica* subsp. *enterica*, strain SL491 (CVM36357) was sequenced at the J. Craig Venter Institute (GenBank: ABFH00000000); strain SL491 (CVM36357) is reported to contain two unknown plasmids (GenBank: CP001148 and CP001149).[1]

S. enterica are Gram-negative, rod-shaped, flagellated bacteria. The species is divided into six subspecies (I, II, IIIa, IIIb, IV, VI) where only subspecies I, subsp. *enterica*, is considered of clinical relevance.[3] Salmonellosis (non-typhoidal), due to the greater than 1500 serovars of *S. enterica* subsp. *enterica*, is one of the most common food-borne diseases with approximately 1 million cases that occur in the United States every year.[4] Pathogenicity results from a variety of virulence factors found in plasmids, prophages, and five pathogenicity islands which allow these organisms to colonize and infect host organisms.[5,6]

S. enterica subsp. *enterica* serovar Virchow (formerly *Salmonella virchow*) is becoming increasingly prevalent, especially in Israel, where it shows increasing incidence and antibiotic resistance both in humans and animals.[7,8] It is considered to be an invasive serotype in immunocompetent children presenting a wide spectrum of clinical manifestations. Isolates belonging to serovar Virchow are distinguished by resistance to quinolone antimicrobials (notably, nalidixic acid) and are very often multiply resistant.[9,10]

Material Provided:
Each vial contains approximately 0.5 mL of bacterial culture in 0.5X Nutrient broth supplemented with 10% glycerol.

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

Packaging/Storage:
NR-28801 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:
Media:
Tryptic Soy broth or Nutrient broth or equivalent
Tryptic Soy agar with 5% defibrinated sheep blood or Nutrient agar or equivalent
Incubation:
Temperature: 37°C
Atmosphere: Aerobic
Propagation:
1. Keep vial frozen until ready for use; then thaw.
2. Transfer the entire thawed aliquot into a single tube of broth.
3. Use several drops of the suspension to inoculate an agar slant and/or plate.
4. Incubate the tube, slant and/or plate at 37°C for 24 hours.

Citation:
Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Salmonella enterica* subsp. *enterica*, Strain SL491 (CVM36357) (Serovar Virchow), NR-28801."

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/bmbl5/index.htm.

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References:

1. Fricke, W. F., et al. "Comparative Genomics of 28 *Salmonella enterica* Isolates: Evidence for CRISPR-Mediated Adaptive Sublineage Evolution." J. Bacteriol. 193 (2011): 3556-3568. PubMed: 21602358.
2. Grimont, P. A. D. and F.-X. Weill. Antigenic Formulae of the *Salmonella* Serovars, 2007, 9th edition. Paris: WHO Collaborating Centre for Reference and Research on *Salmonella*, Pasteur Institute.
3. Scallan, E., et al. "Foodborne Illness Acquired in the United States – Major Pathogens." Emerg. Infect. Dis. 17 (2011): 7-15. PubMed: 21192848.
4. Lavigne, J. P. and A. B. Blanc-Potard. "Molecular Evolution of *Salmonella enterica* Serovar Typhimurium and Pathogenic *Escherichia coli*: From Pathogenesis to Therapeutics." Infect. Genet. Evol. 8 (2008): 217-226. PubMed: 18226587.
5. Parsons, D. A. and F. Heffron. "*sciS*, an *icmF* Homolog in *Salmonella enterica* Serovar Typhimurium, Limits Intracellular Replication and Decreases Virulence." Infect. Immun. 73 (2005): 4338-4345. PubMed: 15972528.
6. Weinberger, M., et al. "*Salmonella enterica* Serotype Virchow: Epidemiology, Resistance Patterns and Molecular Characterisation of an Invasive *Salmonella* Serotype in Israel." Clin. Microbiol. Infect. 12 (2006): 999-1005. PubMed: 16961637.
7. Solnik-Isaac, H., et al. "Quinolone Resistance of *Salmonella enterica* Serovar Virchow Isolates from Humans and Poultry in Israel: Evidence for Clonal Expansion." J. Clin. Microbiol. 45 (2007): 2575-2579. PubMed: 17596371.
8. Bonalli, M., et al. "*Salmonella enterica* Serotype Virchow Associated with Human Infections in Switzerland: 2004-2009." BMC Infect. Dis. 11 (2011): 9. PubMed: 21345197.
9. Bertrand, S., et al. "Clonal Emergence of Extended-Spectrum β-Lactamase (CTX-M-2)-Producing *Salmonella enterica* Serovar Virchow Isolates with Reduced Susceptibilities to Ciprofloxacin among Poultry and Humans in Belgium and France (2000 to 2003)." J. Clin. Microbiol. 44 (2006): 2897-2903. PubMed: 16891509.
10. Yue, M., et al. "Diversification of the *Salmonella* Fimbriae: A Model of Macro- and Microevolution." PLoS One 7 (2012): e38596. PubMed: 22701679.
11. Jacobsen, A., et al. "The *Salmonella enterica* Pan-genome." Microb. Ecol. 62 (2011): 487-504. PubMed: 21643699.

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