

***Brucella abortus*, Strain RB51**

Catalog No. NR-2552

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Contributor:

Centers for Disease Control and Prevention, Atlanta, Georgia

Product Description:

Bacteria Classification: *Brucellaceae*, *Brucella*

Agent: *Brucella abortus*

Biotype/Biovar: Rough

Strain: RB51

Original Source:¹ Derived from *Brucella abortus*, strain 2308 in 1991 at the Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, Virginia

Brucella species are the etiological agents of brucellosis, a zoonotic disease endemic in many areas of the world, and characterized by chronic infections in animals leading to abortion and infertility. Transmission from animal to human via contact with infected animal products or through the air may lead to Malta (or undulant) fever, a long debilitating disease treatable by a prolonged course of antibiotics. *Brucella* species are recognized as potential agricultural, civilian, and military bioterrorism agents.

Brucella abortus (*B. abortus*) is a non-motile, aerobic, gram-negative coccobacillus which displays a moderate degree of human virulence. Very little is known about the genetics of *Brucella* virulence, largely due to a lack of classical virulence factors. A type IV secretion system has been identified as essential for intracellular survival and multiplication of *Brucella*.²

B. abortus, strain RB51 is an attenuated, stable rough mutant derived from the virulent strain 2308.^{1,3} *B. abortus*, strain RB51 is the official vaccine for the U.S. bovine eradication program, and is also being used in several other countries to prevent and control animal brucellosis.

Material Provided:

Each vial contains approximately 1 mL of bacterial culture in Tryptic Soy Broth supplemented with 10% glycerol. Please see the Certificate of Analysis for concentration of viable organisms.

Packaging/Storage:

NR-2552 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

Tryptic Soy Agar, or equivalent

Incubation:

Temperature: 30°C

Atmosphere: Aerobic

Propagation:

1. Keep vial frozen until ready for use; thaw slowly.
2. Transfer the entire thawed aliquot into a single tube of Tryptic Soy Broth.
3. Use several drops of the suspension to inoculate a Tryptic Soy Agar slant and/or plate.
4. Incubate the tubes and plate at 30°C for 48 hours.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: *Brucella abortus*, Strain RB51, NR-2552."

Biosafety Level: 3

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. 4th ed. Washington, DC: U.S. Government Printing Office, 1999. HHS Publication No. (CDC) 93-8395. This text is available online at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm.

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References:

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2. Boschioli, M. L., et al. "Type IV Secretion and *Brucella* Virulence." Vet. Microbiol. 90 (2002): 341–348. PubMed: 12414154.
3. Vemulapalli, R., et al. "*Brucella abortus* RB51: Enhancing Vaccine Efficacy and Developing Multivalent Vaccines." Vet. Microbiol. 90 (2002): 521–532. PubMed: 12414168.
4. Halling, S. M., et al. "Completion of the Genome Sequence of *Brucella abortus* and Comparison to the Highly Similar Genomes of *Brucella melitensis* and *Brucella suis*." J. Bacteriol. 187 (2005): 2715–2726. PubMed: 15805518.
5. Chain, P. S. et al. "Whole-Genome Analyses of Speciation Events in Pathogenic Brucellae." Infect. Immun. 73 (2005): 8353–8361. PubMed: 16299333.
6. Ratushna, V. G., et al. "Molecular Targets for Rapid Identification of *Brucella* spp." BMC Microbiol. 6 (2006): 13. PubMed: 16504063.
7. Ciochini, A. E., et al. "Identification of Active Site Residues of the Inverting Glycosyltransferase Cgs Required for the Synthesis of Cyclic β -1,2-Glucan, A *Brucella abortus* Virulence Factor." Glycobiology 16 (2006): *in press*. PubMed: 16603625.

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