

Recombinant *Borrelia burgdorferi* sensu stricto (B31) CRASP-1 Protein, MBP-tagged

Cat. No. BOR-027 **Lot. No.** (See product label)

SPECIFICATION

Product Overview

Recombinant *Borrelia burgdorferi* CRASP-1 protein, fused to an MBP-tag and produced in *E. coli* (>90% purity).

Tag

MBP

Background

Complement Regulator-Acquiring Surface Protein 1 (CRASP-1, CspA) is a 25.9 kDa multifunctional protein, encoded by the spirochete *B. burgdorferi*, which is carried by Ixodes ticks. Strain B31 is the type strain (ATCC 35210) for this organism and was derived by limited dilutional cloning from the original Lyme-disease tick isolate obtained by A. Barbour (Johnson, et al., 1984). Native CRASP-1 represents a homodimer with a previously unknown complex protein fold (Cordes, et al., 2005). CRASP-1 and four additional immune evasion proteins bind combinations of human plasma regulators, including collagen I, collagen III, collagen IV, fibronectin, laminin, factor H-like protein 1 (FHL-1) (resulting in inhibition of complement activation in mammals) and Human Bone Morphogenic Protein 2. These interactions may contribute to adhesion, bacterial colonization, and organ tropism to promote dissemination of *B. burgdorferi* in the host.

Borrelia species contain a large number of both linear and circular plasmids, some of which appear to be repeated or contain fragments of other genes. These regions may serve as pools of variability for the survival of *Borrelia* in its multiple environments during its life cycle. Multiple copies of sequences analogous to CRASP-1 genes have been detected in *Borrelia* plasmids. In addition, the sequence for CRASP-1 contains a repeated sequence folded into a stable stem loop structure, typical of RNA genes

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(Kraiczy, et al., 2004).

CRASP-1 also binds the human terminal complement components C7 and C9 and blocks assembly and membrane insertion of the terminal complement complex (TCC), as confirmed by haemolytic assays, inhibiting polymerization of C9. When CRASP-1 was expressed ectopically on the surface of serum-sensitive *B. garinii*, it blocked TCC assembly and induced serum resistance in the transformed bacteria. By inducing serum resistance and terminal complement pathway inhibition, *B. burgdorferi* is able to survive in the hostile environment of human plasma (Hallström, et al., 2010).

Purity	>90% by SDS-PAGE
Formulation	0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2 and 0.01% (w/v) Sodium Azide
Stability	At +4 centigrade: Not determined. At -80 centigrade: Not determined.
Freezing	Can be frozen, but avoid multiple freeze/thaw cycles.
Storage	Short Term Storage: +2 centigrade to +8 centigrade Long Term Storage: -80 centigrade
Concentration	1.0 mg/mL by UV absorbance at 280 nm
Notes	This product is intended for research and manufacturing uses only. It is not a diagnostic device. The user assumes all responsibility for care, custody and control of the material, including its disposal, in accordance with all regulations.
Type	Recombinant

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ClassID 1 Infectious Disease

GENE INFORMATION

Synonyms Borrelia burgdorferi sensu stricto (B31) CRASP-1

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