

Active Native Staphylococcus aureus Protein A

Cat. No. Protein A-01S **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Protein A from Staphylococcus aureus Soluble, essentially salt-free, lyophilized powder, extracellular
Species	Staphylococcus aureus
Description	Plays a role in the inhibition of the host innate and adaptive immune responses. Possesses five immunoglobulin-binding domains that capture both the fragment crystallizable region (Fc region) and the Fab region (part of Ig that identifies antigen) of immunoglobulins. In turn, Staphylococcus aureus is protected from phagocytic killing via inhibition of Ig Fc region. In addition, the host elicited B-cell response is prevented due to a decrease of antibody-secreting cell proliferation that enter the bone marrow, thereby decreasing long-term antibody production. Inhibits osteogenesis by preventing osteoblast proliferation and expression of alkaline phosphatase, type I collagen, osteopontin and osteocalcin. Acts directly as a pro-inflammatory factor in the lung through its ability to bind and activate tumor necrosis factor alpha receptor 1/TNFRSF1A.
Form	Essentially salt-free, lyophilized powder
Bio-activity	Protein A is a highly stable cell surface receptor produced by several strains of Staphylococcus aureus. It consists of a single polypeptide chain of molecular weight 42 kDa, containing four repetitive domains rich in aspartic and glutamic acids but devoid of cysteine. It contains little or no carbohydrate and only 4 tyrosine residues and no tryptophans. Protein A is capable of binding to the Fc portion of

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immunoglobulins, especially IgGs, from a large number of species. One protein A molecule has been shown to bind at least 2 molecules of IgG simultaneously. The IgG binding domain of Protein A consists of three anti-parallel α -helices, the third of which is disrupted when the protein is complexed with the Fc region of the immunoglobulins. Protein A will bind the Fc portion of human IgG subclasses, IgM, IgA and IgE; and mouse IgG1 (weakly), IgG2a, and IgG2b. Protein A also binds IgGs from other species, including monkey, rabbit, pig, guinea pig, dog, and cat. Protein A also participates in a number of different protective biological functions including anti-tumor, toxic, and carcinogenic activities. In addition to acting as an immunomodulator, it also has antifungal and antiparasitic properties.

Applications

Protein A from *Staphylococcus aureus* has been used:
 to coat nitrocellulose sheet with protein A for immunoassay of agalactosyl IgG.
 as a blocking agent before the use of secondary antibody in immunohistochemistry.
 as a binding agent to antibody during antibody immobilization.
 Protein A may be conjugated with various reporter molecules including fluorescent dyes (FITC), enzyme markers (peroxidase, β -galactosidase, alkaline phosphatase), biotin, and colloidal gold without affecting the antibody binding site on the molecule. These conjugates are used to detect immunoglobulins in various immunochemical assays including western blotting, immunohistochemistry, and ELISA applications. In addition, protein A may be immobilized on a solid support such as agarose or acrylic beads for the purification of either polyclonal or monoclonal immunoglobulins. It is also routinely used for immunoprecipitation assays.

Storage

2-8 centigrade

Concentration

7-14 mg/mg, solid binding capacity (human IgG)

Dilutions

H₂O: soluble 1 mg/mL, clear, colorless

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GENE INFORMATION

Gene Name	SAOUHSC_00069 protein A [Staphylococcus aureus subsp. aureus NCTC 8325]
Official Symbol	protein A
Synonyms	SAOUHSC_00069; protein A
Gene ID	3919448
Protein Refseq	YP_498670
UniProt ID	P02976

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