Active Recombinant Human SFTPD Protein

Cat. No. SFTPD-10H **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Recombinant Human SFTPD(Ala21-Phe375 (Glu22Gly)) was expressed in NS0.
Species	Human
Source	Mammalian Cells
ProteinLength	Ala21-Phe375 (Glu22Gly)
Description	SP-D (surfactant protein-D; also PSP-D) is a 43 kDa member of the collectin family of innate immune modulators. It is constitutively secreted by alveolar lining cells and epithelium associated with tubular structures. Its principal components consist of a collagen-like region and a C-terminal carbohydrate recognition domain (CRD), a structure that further places it in a subset of an expanded group of proteins termed defense collagens. Human SP-D is synthesized as a 375 amino acid (aa) precursor. It contains a 20 aa signal sequence and a 355 aa mature region. The mature molecule is characterized by the presence of a 25 aa N-terminal linking-region, a 177 aa hydroxyproline and hydroxylysine collagen-like domain, a 46 aa coiled-coil segment, and a 106 aa, C-terminal collectin-like C-type lectin domain (CRD). Two additional, potential isoforms exist. One shows a 13 aa N-terminal extension, while the other combines the N-terminal extension with a deletion of aa's # 206 - 375. Mature human SP-D shares 75% and 78% aa identity with mouse and pig SP-D, respectively. Monomeric SP-D is unusual. The basic form of SP-D is that of a glycosylated, disulfide-linked 150 kDa trimer that generates an alpha -helical coiled-coil structure linked to a "head" of three symmetrical CRDs. Each CRD recognizes the hydroxides

Tel: 1-631-559-9269 1-516-512-3133
Email: info@creative-biomart.com Fax: 1-631-938-8127
45-1 Ramsey Road, Shirley, NY 11967, USA

	of one monosaccharide. Trimerization allows for the discrimination of monosaccharide patterns specific to microbial pathogens. Typically, SP-D forms a higher-order 620 kDa, X-shaped dodecamer through disulfide bonds associated with the N-terminus. This allows for even finer discrimination of self vs. nonself carbohydrate patterns, and facilitates binding to complex antigens. One polymorphism, a Met11 - Thr11 transition in human, apparently precludes the formation of oligomers, potentially affecting the ability of affected individuals to interact with microorganisms. Finally, SP-D is known to bind both SIRP alpha and the calreticulin/CD91 complex on macrophages. When the ratio of antigen/pathogen to available CRDs is low, antigen can be bound without occupying all available CRDs. The free CRDs will bind to SIRP alpha, generating a signal that downmodulates the inflammatory response. When virtually all CRDs are occupied by ligand, however, free CRDs are not available for SIRP alpha binding. Instead, the dodecamer is depicted to undergo a structural rearrangement, exposing the N-termini of all four linked trimers. This exposed terminus is known to bind to the calreticulin/CD91 complex, an event that initiates inflammation. Thus, it would appear that SP-D allows for a graded response to environmental challenge. SP-D provides a mechanism for the clearance of small antigenic insults without the need for a damaging inflammatory response.
Predicted N Terminal	Ala21
Form	Lyophilized from a 0.2 μm filtered solution in PBS.
Bio-activity	Measured by its ability to bind fluorescein-conjugated E. coli Bioparticles. Kuan, S.F. et al. (1992) J. Clin. Invest. 90:97. The ED50 for this effect is 0.5-3 μg/mL.
Molecular Mass	Predicted Molecular Mass: 35.4 kDa (monomer); SDS-PAGE: 40-48 kDa, reducing conditions.
Endotoxin	<0.10 EU per 1 μg of the protein by the LAL method.

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Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain
Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. 12 months from date of receipt, -20 to -70 centigrade as supplied. 1 month, 2 to 8 centigrade under sterile conditions after reconstitution. 3 months, -20 to -70 centigrade under sterile conditions after reconstitution.
Reconstitution	Reconstitute at 100 µg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

GENE INFORMATION

Gene Name	SFTPD surfactant protein D [Homo sapiens]
Official Symbol	SFTPD
Synonyms	SFTPD; surfactant protein D; SFTP4, surfactant, pulmonary associated protein D; pulmonary surfactant-associated protein D; COLEC7; SP D; collectin 7; collectin-7; lung surfactant protein D; pulmonary surfactant apoprotein; surfactant, pulmonary-associated protein D; surfactant-associated protein, pulmonary 4; SP-D; PSP-D; SFTP4;
Gene ID	6441
mRNA Refseq	NM_003019
Protein Refseq	NP_003010
MIM	178635

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UniProt ID	P35247

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