

C1s Protein, Human, Recombinant (His)

General Information

Synonyms:	complement component 1, s subcomponent; C1s; FLJ44757
Protein Construction:	A DNA sequence encoding the recombinant human complement component C1s (NP_001725.1) (Met 1-Asp 688) was expressed with a C-terminal polyhistidine tag. Predicted N terminal: Glu 16
Species:	Human
Expression Host:	HEK293 Cells
Accession:	P09871
Molecular Weight:	76.3 kDa (predicted); 82.06 kDa, 56.59 kDa and 33.36 kDa (reducing condition, due to glycosylation)

QC Testing

Biological Activity:	Measured by its ability to cleave a colorimetric peptide substrate, N-carbobenzyloxy-Lys-ThioBenzyl ester (Z-Lys-SBzl), in the presence of 5,5'-Dithio-bis (2-nitrobenzoic acid) (DTNB). The specific activity is > 7,000 pmoles/min/ μ g, as measured under the described conditions.
Purity:	> 90 % as determined by SDS-PAGE. >90% as determined by SEC-HPLC
Endotoxin:	< 1.0 EU/ μ g of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μ m filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Complement is an integral component of the adaptive and innate immune systems and represents one of the major effector systems for the immune responses. The classical complement pathway is triggered by C1, a

complex composed of the binding protein C1q and two proenzymes, C1r and C1s. Upon binding of IgG to the head of C1q, C1r undergoes autoactivation and in turn cleaves and activates C1s. C1r and C1s, the proteases responsible for activation and proteolytic activity of the C1 complex of complement, share similar overall structural organizations featuring five nonenzymic protein modules (two CUB modules surrounding a single EGF module, and a pair of CCP modules) followed by a serine protease domain. Besides highly specific proteolytic activities, both proteases exhibit interaction properties associated with their N-terminal regions. In contrast, C1r and C1s widely differ from each other by their glycosylation patterns: both proteins contain Asn-linked carbohydrates, but four glycosylation sites are present on C1r, and only two on C1s. As a highly specific serine protease, C1s executes the catalytic function of the C1 complex: the cleavage of C4 and C2, and thus instigates a sequence of activation steps of other components of the complement system, culminating in the formation of the membrane attack complex which induces cell lysis. Like other complement serine proteases C1s has restricted substrate specificity and it is engaged into specific interactions with other subcomponents of the complement system. The only other protein known to interact with C1s physiologically is SerpinC1, an inhibitor of serine protease, which inhibits C1s activity and thus plays a regulatory role in controlling the function of C1s enzyme.

Reference

- Arlaud GJ, et al. (1989) Structure and function of C1r and C1s: current concepts. *Behring Inst Mitt.* (84): 56-64.
- Thielens NM, et al. (1999) Structure and functions of the interaction domains of C1r and C1s: keystones of the architecture of the C1 complex. *Immunopharmacology.* 42(1-3): 3-13.
- Gl P, et al. (2002) C1s, the protease messenger of CStructure, function and physiological significance. *Immunobiology.* 205(4-5): 383-94.

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