

## Serpin D1 Protein, Human, Recombinant (His)

### General Information

Synonyms:	serpin peptidase inhibitor, clade D (heparin cofactor), member 1; SerpinD1; HLS2; D22S673; HC2; LS2; THPH10; HCII; HCF2
Protein Construction:	A DNA sequence encoding the human SerpinD1 precursor (NP_000176.2) (Met 1-Ser 499) was expressed with a C-terminal polyhistidine tag. Predicted N terminal: Gly 20
Species:	Human
Expression Host:	HEK293 Cells
Accession:	P05546
Molecular Weight:	56.4 kDa (predicted); 65-70 kDa (reducing condition, due to glycosylation)

### QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 97 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm 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

SerpinD1, also known as heparin cofactor II, is a member of Serpin superfamily of the serine proteinase inhibitors. HCII is a glycoprotein in human plasma that inhibits thrombin and chymotrypsin, and the rate of inhibition of thrombin is rapidly increased by Dermatan sulfate (DS), heparin (H) and glycosaminoglycans (GAG). The stimulatory effect of glycosaminoglycans on the inhibition is mediated, in part, by the N-terminal acidic domain of

HCII. Interestingly, a C-terminal His-tagged recombinant HCII exhibits enhanced activity of thrombin inhibition. It has been suggested that HCII plays a unique and important role in vascular homeostasis, and accordingly mutations in this gene or congenital HCII deficiency is potentially associated with thrombosis. HCII specifically inhibits thrombin action at the site of vascular wall injury and HCII-thrombin complexes have been detected in human plasma. HCII protects against thrombin-induced vascular remodeling in both humans and mice and HCII is a predictive biomarker and therapeutic target for atherosclerosis. SerpinD1 also inhibits chymotrypsin, but in a glycosaminoglycan-independent manner.

### Reference

Rau JC, et al. (2009) Heparin cofactor II in atherosclerotic lesions from the Pathobiological Determinants of Atherosclerosis in Youth (PDAY) study. *Exp Mol Pathol.* 87(3): 178-83.

Aihara K, et al. (2009) Heparin cofactor II as a novel vascular protective factor against atherosclerosis. *J Atheroscler Thromb.* 16(5): 523-31.

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