# Data Sheet (Cat.No.TMPY-00735)

TargetMol

## Cathepsin S Protein, Human, Recombinant (His)

### General Information

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| Synonyms: | cathepsin S;MGC3886;CTSS |
| Protein Construction: | A DNA sequence encoding the pro form of human CTSS (NP_004070.3) (Met 1-Ile 331) with a carboxy-terminal polyhistidine tag was expressed. Predicted N terminal: Gln 17 |
| Species: | Human |
| Expression Host: | HEK293 Cells |
| Accession: | P25774-1 |
| Molecular Weight: | 37 kDa (predicted); 37 kDa (reducing conditions) |

### QC Testing

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| Biological Activity: | Measured by its ability to cleave a fluorogenic peptide substrate, (7-methoxycoumarin-4-yl) acetyl-Arg-Pro-Lys-Pro-Val-Glu-Nva-Trp-Arg-Lys (2, 4-dinitrophenyl)-NH2. Cleavage of ES002 can be measured using excitation and emission wavelength at 320 nm and 405 nm, respectively. The specific activity is >300 pmoles/min/μg. (Activation description: The enzyme achieves its activity under acidic pH) |
| Purity: | > 90 % 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

Cathepsin S (CTSS), one of the lysosomal proteinases, has many important physiological functions in the nervous system, especially in process of extracellular matrix degradation and endocellular antigen presentation. CTSS is

synthesized as inactive precursor of 331 amino acids consisting of a 15-aa signal peptide, a propeptide of 99 aa, and a mature polypeptide of 217 aa. It is activated in the lysosomes by a proteolytic cleavage of the propeptide. Cathepsin S is expressed in the lysosome of antigen presenting cells, primarily dendritic cells, B-cells and macrophages. Compared with other lysosomal cysteine proteases, cathepsin S has displayed some unique characteristics. Cathepsin S is most well known for its critical function in the proteolytic digestion of the invariant chain chaperone molecules, thus controlling antigen presentation to CD4+ T-cells by major histocompatibility complex (MHC) class II molecules or to NK1.1+ T-cells via CD1 molecules. Cathepsin S also appears to participate in direct processing of exogenous antigens for presentation by MHC class II to CD4+ T-cells, or in cross-presentation by MHC class I molecules to CD8+ T-cells. In addition, although direct evidence is still lacking, in its secreted form cathepsin S is implicated in degradation of the extracellular matrix, which may contribute to the pathology of a number of diseases, including arthritis, atherosclerosis, neurological diseases and chronic obstructive pulmonary disease.

Reference

Liu W,et al.(2004) Cysteine protease cathepsin S as a key step in antigen presentation. Drug News Perspect. 17(6): 357-63.

Thurmond RL,et al.(2005) Cathepsin S inhibitors as novel immunomodulators. Curr Opin Investig Drugs. 6(5): 473-82.

Wang DM,et al.(2008) Cathepsin S in pathogenesis of neurological diseases. Zhejiang Da Xue Xue Bao Yi Xue Ban. 37(4): 422-6.



Tel:781-999-4286 E_mail:info@targetmol.com Address:34 Washington Street,Wellesley Hills,MA 02481