Human Cathepsin B / CTSB Protein (His Tag)

Catalog Number: **10483-H08H**

General Information

Gene Name Synonym:

APPS; CPSB

Protein Construction:

A DNA sequence encoding the pre pro form of human CTSB (Arg18-Ile339) (NP_001899.1) was expressed with a C-terminal polyhistidine tag.

Source: Human

Expression Host: HEK293 Cells

QC Testing

Purity: > 97 % as determined by SDS-PAGE

Bio Activity:

Measured by its ability to cleave the fluorogenic peptide substrate Z-LR-AMC (R&D Systems, Catalog # ES008) . The specific activity is >2,500 pmoles/min/μg.

Endotoxin:

< 1.0 EU per μg of the protein as determined by the LAL method

Stability:

Samples are stable for up to twelve months from date of receipt at -70 ℃

Predicted N terminal: Arg 18 & Phe 74

Molecular Mass:

The recombinant human CTSB existing as the proform consists of 332 amino acids and has a predicted molecular mass of 37.2 kDa. rhCTSB migrates with the molecular weight of 36 and 43 kDa as the proform and mature form rspectively in SDS-PAGE under reducing conditions.

Formulation:

Lyophilized from sterile PBS, pH 7.4

Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Specific concentrations are included in the hardcopy of COA. Please contact us for any concerns or special requirements.

Usage Guide

Storage:

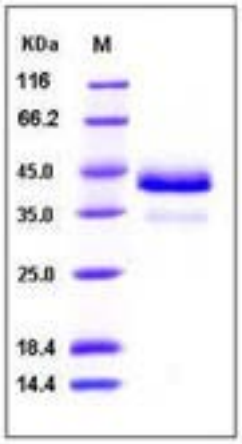
Store it under sterile conditions at -20℃ to -80℃ upon receiving. Recommend to aliquot the protein into smaller quantities for optimal storage.

Avoid repeated freeze-thaw cycles.

Reconstitution:

Detailed reconstitution instructions are sent along with the products.

SDS-PAGE:



Protein Description

Cathepsin B is a papain-family cysteine protease that is normally located in lysosomes, where it is involved in the turnover of proteins and plays various roles in maintaining the normal metabolism of cells. This protease has been implicated in pathological conditions, e.g., tumor progression and arthritis. In disease conditions, increases in the expression of cathepsin B occur at both the gene and protein levels. Cathepsin B is synthesized as a preproenzyme and the primary pathways for its normal trafficking to the lysosome utilize mannose 6-phosphate receptors (MPRs). Mature cathepsin B has the ability to degrade several extracellular matrix components at both neutral and acidic pH and has been implicated in the progression of several human and rodent tumors progression and arthritis. Cathepsin B expression is increased in many human cancers at the mRNA, protein and activity levels. It is also frequently overexpressed in premalignant lesions, an observation that associates this protease with local invasive stages of cancer. Increased expression of cathepsin B in primary cancers, and especially in preneoplastic lesions, suggests that this enzyme might have pro-apoptotic features. Active cathepsin B is also secreted from tumours, a mechanism likely to be facilitated by lysosomal exocytosis or extracellular processing by surface activators. Cathepsin B is localized to caveolae on the tumour surface, where binding to the annexin II heterotetramer occurs. Thus CTSB is suggested as a tumor marker. Additionally, Cathepsin B can degrade extracellular matrix proteins, such as collagen IV and laminin, and can activate the precursor form of urokinase plasminogen activator (uPA), perhaps thereby initiating an extracellular proteolytic cascade.

References

1.Mai J, *et al.* (2000) Cell surface complex of cathepsin B/annexin II tetramer in malignant progression. Biochim Biophys Acta. 1477(1-2): 215-30. 2.Podgorski I, *et al.* (2003) Cathepsin B and its role(s) in cancer progression. Biochem Soc Symp. (70): 263-76. 3.Yan S, *et al.* (2003) Molecular regulation of human cathepsin B: implication in pathologies. Biol Chem. 384(6): 845-54.