

# Human tPA / PLAT Protein

Catalog Number: 10157-HNCH2



Sino Biological  
Biological Solution Specialist

## General Information

### Gene Name Synonym:

T-PA; TPA

### Protein Construction:

The  $\beta$  chain (Ile 311-Pro 562) of mature human tPA (NP\_000921.1) was obtained after cleavage of the N-terminal human IgG1 Fc region from the purified chimera.

**Source:** Human

**Expression Host:** HEK293 Cells

## QC Testing

**Purity:** > 80 % as determined by SDS-PAGE

### Bio-activity:

Measured by its ability to cleave a peptide substrate, N-carbobenzyloxy-Gly-Gly-Arg-7-amido-4-methylcoumarin. The specific activity is >300 pmols/min/ $\mu$ g.

### Endotoxin:

< 1.0 EU per  $\mu$ g of the protein as determined by the LAL method

### Stability:

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

**Predicted N terminal:** Ile 311

### Molecular Mass:

The recombinant human tPA  $\beta$  chain consists of 252 amino acids and has a predicted molecular mass of 28 kDa. As a result of glycosylation, the apparent molecular mass of rh tPA $\beta$  is approximately 38 kDa in SDS-PAGE under reducing conditions.

### Formulation:

Lyophilized from sterile 100mM Glycine, 10mM NaCl, 50mM Tris, pH 7.5

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:

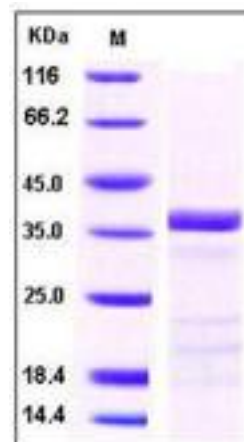
Store it under sterile conditions at -20°C to -80°C upon receiving. Recommend to aliquot the protein into smaller quantities for optimal storage.

**Avoid repeated freeze-thaw cycles.**

### Reconstitution:

Detailed reconstitution instructions are sent along with the products.

## SDS-PAGE:



## Protein Description

Tissue plasminogen activator (abbreviated tPA or PLAT), is traditionally viewed as a simple serine protease whose main function is to convert plasminogen into biologically active plasmin. As a protease, tPA plays a crucial role in regulating blood fibrinolysis, in maintaining the homeostasis of extracellular matrix and in modulating the post-translational activation of growth factors. tPA is synthesized and secreted as a single chain polypeptide precursor which is cleaved in turn by plasmin. Proteolytic cleavage at the C-terminal side of Arg275 generates the enzyme composed of two subunits, designated as  $\alpha$  and  $\beta$  chains which are held together by a single disulfide bond. Unlike the other members of the chymotrypsin family, tPA has one particular distinction in that the catalytic efficiency of the single-chain enzyme is only slightly lower than that of the proteolytically cleaved form and is therefore not a true zymogen. tPA is found not only in the blood, where its primary function is as a thrombolytic enzyme, but also in the central nervous system (CNS). It participates in a number of physiological and pathological events in the CNS, as well as the role of neuroserpin as the natural regulator of tPA's activity in these processes. Increased or decreased activity of tPA leads to hyperfibrinolysis or hypofibrinolysis, respectively. In addition, as a cytokine, tPA plays a pivotal role in the pathogenesis of renal interstitial fibrosis through diverse mechanisms. Thus, as a fibrogenic cytokine, it promotes the progression of kidney diseases.

## References

- 1.Yepes M, *et al.* (2004) New functions for an old enzyme: nonhemostatic roles for tissue-type plasminogen activator in the central nervous system. *Exp Biol Med* (Maywood). 229(11): 1097-104.
- 2.Samson AL, *et al.* (2006) Tissue-type plasminogen activator: a multifaceted modulator of neurotransmission and synaptic plasticity. *Neuron*. 50(5): 673-8.
- 3.Skrzypiec AE, *et al.* (2008) Tissue plasminogen activator in the amygdala: a new role for an old protease. *J Physiol Pharmacol*. 59 Suppl 8: 135-46.

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