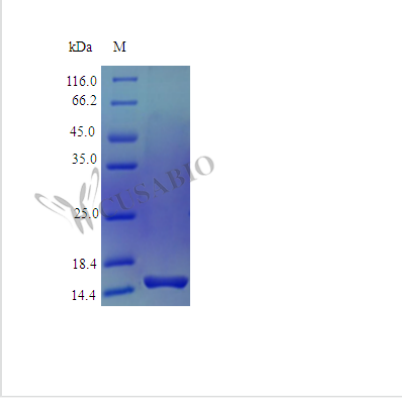
Recombinant Human Pleiotrophin protein (PTN)

Product Code	CSB-AP002931HU
Abbreviation	Recombinant Human PTN protein (Active)
Uniprot No.	P21246
Storage Buffer	0.2 m filtered PBS, pH 7.4 ,lyophilized
Product Type	Growth Factors
Immunogen Species	Homo sapiens (Human)
Biological Activity	Fully biologically active when compared to standard. The biological activity was measured by its ability to enhance neurite outgrowth of E16-E18 rat embryonic cortical neurons, when neurons were plated on 96 well culture plates that had been pre-coated with 100 µl/well of a solution of 5-10 µg/ml rHuPTN.
Purity	>96% as determined by SDSPAGE.
Sequence	GKKEKPEKKV KKSDCGEWQW SVCVPTSGDC GLGTREGTRT GAECKQTMKT QRCKIPCNWK KQFGAECKYQ FQAWGECDLN TALKTRTGSL KRALHNAECQ KTVTISKPCG KLTKPKPQAE SKKKKKEGKK QEKMLD
Research Area	Immunology
Source	E.Coli
Target Names	PTN
Expression Region	33-168aa
Tag Info	Tag-Free
Mol. Weight	15.3 kDa
Protein Length	Full Length of Mature Protein
PubMed ID	1701634; 2270483; 1768439; 1457401; 8484754; 9299545; 14702039; 12690205; 15489334; 2388713; 1733956; 8241100; 8484780; 11278720; 20873783

Image



Description

Recombinant Human Pleiotrophin protein (PTN) is produced in an E. coli expression system and represents the full-length mature protein from amino acids 33 to 168. This tag-free protein achieves a high purity level of over 96% as verified by SDS-PAGE. It also maintains a low endotoxin level of less than 1.0 EU/μg according to the LAL method. Its biological activity appears to be confirmed through its ability to enhance neurite outgrowth in rat embryonic cortical neurons under standard testing conditions.

Pleiotrophin is a heparin-binding growth factor that may play a significant role in cellular growth and differentiation. It seems particularly important in neurobiology, where it's known to promote neurite outgrowth and support neuronal development. PTN is involved in several key signaling pathways and has become a subject of interest in neuroscience research due to its potential implications in neural regeneration and repair processes.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Neurite Outgrowth Assays for Neurodevelopment Research

This recombinant human pleiotrophin can be used to study neurite outgrowth mechanisms in primary neuronal cultures, as demonstrated by its validated activity in promoting neurite extension in rat embryonic cortical neurons. Researchers can work with this protein to investigate dose-response relationships, temporal dynamics of neurite formation, and the molecular pathways involved in neuronal development. The protein may serve as a positive control in neurite outgrowth assays or as a tool to enhance neuronal differentiation in various experimental paradigms. The high purity (>96%) and low endotoxin levels likely make it suitable for sensitive primary cell culture applications.

2. Protein-Protein Interaction Studies

The tag-free nature of this recombinant PTN makes it ideal for studying native protein-protein interactions without potential interference from fusion tags. Researchers can work with this protein in pull-down assays, surface plasmon resonance, or other binding studies to identify and characterize PTN's interaction partners. The high biological activity suggests proper protein folding, which should ensure that binding studies will reflect physiologically relevant interactions. This application appears particularly valuable for mapping PTN's signaling networks and understanding its molecular mechanisms of action.

3. Cell Signaling Pathway Analysis

This biologically active PTN can be used to investigate downstream signaling cascades triggered by pleiotrophin in various cell types. Researchers can treat

cells with this recombinant protein and analyze phosphorylation events, gene expression changes, or other cellular responses using techniques such as Western blotting, qPCR, or proteomics. The validated biological activity suggests that observed cellular responses are likely due to functional protein activity rather than artifacts. The low endotoxin content is crucial for avoiding confounding inflammatory responses in cell-based assays.

4. Antibody Development and Validation

This high-purity recombinant PTN serves as an excellent antigen for developing and validating antibodies against human pleiotrophin. The protein can be used for immunizing animals, screening hybridomas, or validating commercial antibodies through ELISA, Western blot, or immunofluorescence applications. The mature protein sequence (33-168aa) represents the biologically relevant form, making antibodies developed against this protein more likely to recognize endogenous PTN. The tag-free format helps ensure that antibodies will be specific to PTN rather than fusion tags.

5. Biochemical Characterization and Structure-Function Studies

Researchers can work with this recombinant PTN for detailed biochemical analyses including protein stability studies, structural characterization, and enzymatic assays if applicable. The high purity and biological activity make it suitable for biophysical techniques such as circular dichroism spectroscopy, dynamic light scattering, or crystallization attempts. The protein can also be used in mutagenesis studies where wild-type PTN serves as a control for comparing the effects of specific amino acid modifications on protein function and stability.

Endotoxin	Less than 1.0 EU/μg as determined by LAL method.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.