Animal-Free Pleiotrophin Protein, Human (His)

Cat. No.:	HY-P700145AF
Synonyms:	HARP; HB-GAM; HBBM; HBGAM; HBGF-8; HBGF8; HBNF; HBNF-1; HBNF1; heparin affin regulatory protein; Heparin binding growth associated molecule; Heparin binding growth factor 8; Heparin binding neurite outgrowth promoting factor 1; Heparin-binding brain mitogen; Heparin-binding growth factor 8;
Species:	Human
Source:	E. coli
Accession:	P21246 (G33-D168)
Gene ID:	5764
Molecular Weight:	Approximately 19.89 kDa

PROPERTIES

AA Sequence	M G K K E K P E K K V K K S D C G E W Q W S V C V P T S G D C G L G T R E G T R T G A E C K Q T M K T Q R C K I P C N W K K Q F G A E C K Y Q F Q A W G E C D L N T A L K T R T G S L K R A L H N A E C Q K T V T I S K P C G K L T K P K P Q A E S K K K K K E G K K Q E K M L D
Appearance	Lyophilized powder.
Formulation	Lyophilized from a solution containing 1X PBS, pH 7.4.
Endotoxin Level	<0.1 EU per 1 μg of the protein by the LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	Pleiotrophin Protein is a secreted growth factor that transduces its signal through both cell-surface proteoglycan and non-proteoglycan receptors. It binds to the chondroitin sulfate (CS) groups of cell-surface proteoglycan receptors, regulating processes such as cell proliferation, survival, growth, differentiation, and migration in various tissues, including neurons and bone. Pleiotrophin also plays a crucial role in synaptic plasticity and learning-related behavior by inhibiting long-term synaptic potentiation. Through binding to PTPRZ1, Pleiotrophin neutralizes the negative charges of the CS chains, inducing PTPRZ1 clustering and inactivation of its phosphatase activity, leading to increased tyrosine phosphorylation of PTPRZ1 substrates, such as ALK, CTNNB1, or AFAP1L2, activating the PI3K-AKT pathway. It forms complexes with PTPRZ1 and integrin alpha-V/beta-3, stimulating endothelial cell migration. In the adult hippocampus, Pleiotrophin promotes dendritic

arborization, spine development, and functional integration of newborn granule neurons through ALK by activating the AKT signaling pathway. Additionally, it interacts with GPC2, SDC3, and other receptors, mediating diverse functions related to bone formation, neural stem cell proliferation and differentiation, hematopoietic regeneration, and various physiological processes in the female reproductive system and auditory response. The intricate network of interactions underscores the multifaceted role of Pleiotrophin in cellular and tissue-level regulatory mechanisms.

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