

Neuropilin-1 Protein, Human, Recombinant (His)

General Information

Synonyms:	BDCA4;NRP;neuropilin 1;Neuropilin-1;VEGF165R;CD304;NP1
Protein Construction:	A DNA sequence encoding the human NRP1 (NP_001019799.2) (Met1-Lys644) was expressed with a polyhistidine tag at the C-terminus. Predicted N terminal: Phe 22
Species:	Human
Expression Host:	HEK293 Cells
Accession:	NP_001019799.2
Molecular Weight:	71.33 kDa (predicted); 82.01 kDa (reducing conditions)

QC Testing

Biological Activity:	Immobilized Recombinant Human / Cynomolgus VEGF / VEGFA / VEGF165 Protein at 2 µg/mL (100 µL/well) can bind Recombinant Human Neuropilin-1 Protein (ECD, His Tag), the EC50 is 6-18 ng/mL.
Purity:	> 95 % 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

Neuropilin is a type I transmembrane protein and the molecular mass is 120 kDa. Two homologs, Neuropilin-1 and Neuropilin-2, are identified. The primary structure of Neuropilin-1 and Neuropilin-2 is well conserved and is divided into four domains, CUB (a1/a2) domain, FV/FVIII (b1/b2) domain, MAM (c) domain, and (d) domain that contains a transmembrane and a short cytoplasmic region. Neuropilin-1 (NRP1) acts as a receptor for two different

extracellular ligands, class 3 semaphorins, and specific isoforms of vascular endothelial growth factor. The functions of NRP1 and NRP2 have been extensively studied in neurons where they act in axon guidance and in endothelial cells where they promote angiogenesis and cell migration. Neuropilin-1 is likely to mediate contacts between the dendritic cells and the T lymphocytes via homotypic interactions and is essential for the initiation of the primary immune response. NRP1 is a co-receptor for VEGF receptor-2 (VEGFR2) that enhances the binding of VEGF165 to VEGFR2 and VEGF165-mediated chemotaxis. NRP1 expression is regulated in EC by tumor necrosis factor-alpha, the transcription factors dHAND and Ets-1, and vascular injury. NRP1 upregulation is positively correlated with the progression of various tumors. Overexpression of NRP1 in rat tumor cells results in enlarged tumors and substantially enhanced tumor angiogenesis. On the other hand, soluble NRP1 (sNRP1) is an antagonist of tumor angiogenesis.

Reference

- Nakamura F, et al. (2002) Structural and functional relation of neuropilins. *Adv Exp Med Biol.* 515: 55-69.
Romeo PH, et al. (2002) Neuropilin-1 in the immune system. *Adv Exp Med Biol.* 515: 49-54.
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Staton CA, et al. (2007) Neuropilins in physiological and pathological angiogenesis. *J Pathol.* 212(3): 237-48.
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