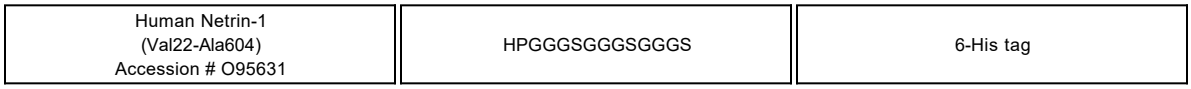
Recombinant Human Netrin-1

Catalog Number: 6419-N1

DESCRIPTION

Source

Mouse myeloma cell line, NS0-derived



N-terminal Sequence Analysis

Val22

Predicted Molecular Mass

67.5 kDa

SPECIFICATIONS

SDS-PAGE

80-85 kda, reducing conditions

Activity

Measured by its binding ability in a functional ELISA.
When Recombinant Rat UNC5H2 Fc Chimera (Catalog # 1006-UN) is immobilized at 5 µg/mL, Recombinant Human Netrin-1 binds with an apparent K_d <1 nM.

Measured in a cell proliferation assay using RT4-D6P2T rat schwannoma cells.
The ED_{50} for this effect is 0.5-2.0 µg/mL.

Endotoxin Level

<0.01 EU per 1 µg of the protein by the LAL method.

Purity

>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation

Lyophilized from a 0.2 µm filtered solution in PBS and EDTA with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution

Reconstitute at 100 µg/mL in PBS.

Shipping

The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage

Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Human Netrin-1 (*netr*: Sanskrit for “one who guides”) is a 75 kDa glycoprotein that is closely related to the laminin γ domain and functions as a chemoattractive or chemorepulsive guidance cue in the central nervous system (CNS) during development (1, 2). The protein is synthesized as a 604 amino acid (aa) precursor that contains a 24 aa signal sequence and a 580 aa mature chain. Residues 46-283 constitute a laminin N-terminal domain (domain VI), while 285-453 make up three laminin-type epidermal growth factor-like domains. There is a final domain that runs from aa 487-601 that qualifies as a Netrin-1 like domain. It is also known as domain C in the context of C. elegans. There are four potential sites for N-linked glycosylation. Human Netrin-1 is 99% aa identical to mouse and rat Netrin-1. Netrin-1 is expressed in adult and embryonic tissues. In the adult, the protein is expressed in Schwann cells, oligodendrocytes and multiple neurons. In embryonic tissues, Netrin-1 is found in somatic mesoderm, heart, branchial pouch, and neuroepithelium. Netrin-1 is a secreted protein that, in addition to its involvement in outgrowth and migration orientation in the developing CNS, plays a significant role in the morphogenesis of endothelial cells and vascular smooth-muscle cells. It is also involved in the processes of cytoskeleton reorganization, angiogenesis, epithelial cell adhesion, and cell migration in the lungs, mammary gland, and pancreas (1, 3).

Netrin-1 effects are controlled through different transmembrane receptors (2). Four of the receptors exist in the Unc-5 (**Unc**=uncontrolled behaviorally) family of proteins, and these include Unc5h1, Unc5h2, Unc5h3/RCM, and Unc5h4. There are also two receptors that belong to the UNC-40 family of molecules. The first is DCC (deleted in colorectal cancer), and the second is neogenin (newly-generated). UNC-5 receptors are noted to mediate the attraction response of axons and netrins. However, UNC-5 molecules, when co-expressed with DCC in the presence of Netrin-1, will mediate repulsion by varying cellular calcium levels (3). The adenosine A2b receptor may also be involved in chemoattraction, either by binding directly with Netrin-1 or by serving as a co-receptor for DCC. These receptors are known as dependence receptors because they depend on their ligand, in this case Netrin-1, for survival (4). Unbound, the receptors induce a specific death signal (4). It is the dysregulation of these receptor systems that may have important roles in tumor biology. DCC and UNC5 proteins make up a system for either initiating or inhibiting apoptosis (4), and it is now believed that Netrin-1 and its dependence receptors play a major role in tumor biology (4-6).

References:

1. Dakouane-Giudicelli, M. *et al.* (2010) J. Histochem. Cytochem. **58**:73.
2. Masuda, T. *et al.* (2008) J. of Neurosci. **28**:10380.
3. Bernet, A. and P. Mehlen (2007) Bull. Cancer **94**:E12.
4. Cirulli, V. and M. Yebra, (2007) Nat. Rev. Mol. Cell. Biol. **8**:296.
5. Dumartin, L. *et al.* (2010) Gastroenterology **137**:1595.
6. Mazelin, L. *et al.* (2004) Nature **431**:80.

PRODUCT SPECIFIC NOTICES

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U.S. Patent # 5,565,331, 6,096,866, 6,017,714, 6,309,638, 6,670,451, and other U.S. and international patents pending.

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