Recombinant Human Pref-1/DLK1/FA1

Catalog Number: 1144-PR/CF

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived human Pref-1/DLK1/FA1 protein Ala24-Pro297 (Arg248Pro) (Lys295Ser) with a C-terminal 6-His tag Accession # AAA75364
N-terminal Sequence Analysis	Ala24 & Phe27
Predicted Molecular Mass	29.7 kDa

SPECIFICATIONS

SDS-PAGE	40-55 kDa, reducing conditions
Activity	Measured by its ability to inhibit adipocyte differentiation of mouse 3T3-L1 mouse embryonic fibroblast adipose-like cells. Smas, C.M. *et al.* (1993) Cell **73**:725. 3.3 µg/mL of Recombinant Human Pref-1/DLK-1/FA1 will inhibit adipocyte differentiation by more than 50%.
Endotoxin Level	<0.10 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. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 250 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 Pref-1 (preadipocyte factor 1), also known as Dlk1 and pG2, belongs to the Notch/Delta/Serrate family of epidermal growth factor (EGF)-like repeat-containing proteins that act as ligands in the Notch signaling pathway (1-4). Human Pref-1 is synthesized as a 383 amino acid (aa) precursor consisting of a 23 aa signal sequence, a 280 aa extracellular region, a 24 aa transmembrane segment, and a 56 aa cytoplasmic tail. The extracellular region contains six tandem EGF-repeats, a juxtamembrane region, and multiple sites for O- and N-glycosylation (3, 5). Heterogeneous transmembrane forms of Pref-1, ranging from 50 to 60 kDa, can be attributed to variability in glycosylation (1-3). In addition to full-length Pref-1A, alternative splicing of the juxtaposition and EGF-repeat regions generate three major short forms, Pref-1B-1D (3, 6). Proteolytic cleavage at one of two extracellular sites in Pref-1A and 1B can produce two soluble forms: a 50 kDa large form and a 24-25 kDa small form (3, 6). Processing of Pref-1C and Pref-1D, by contrast, can produce only small soluble forms. Only the large soluble form demonstrates biological activity (3, 6). Mature human Pref-1A shares 85% aa sequence identity with mouse and rat homologs. Pref-1 is highly expressed in 3T3-L1 preadipocytes and many endocrine tissues, including the growth hormone-producing somatotroph cells of the pituitary gland, insulin-producing (cells, sex hormone-producing Leydig cells of the testis, and ovarian theca interna and Hilus cells (4). Constitutive expression of Pref-1 in preadipocytes blocks differentiation into mature adipocytes (1-7). Pref-1 also regulates the differentiation of skeletal stem cells, thymocytes, and adrenal gland cells, and inhibits GH secretion in pituitary GH3 cells (4).

References:

1. Smas, C.M. & Sul, H.S. (1993) Cell **73**:725.
2. Sul, H.S. (2009) Mol. Endocrinol. **23**:1717.
3. Wang, Y. *et al.* (2006) J. Nutr. **136**:2953.
4. Ansell *et al.* (2007) Mol. Cell Endocrinol. **271**:55.
5. Smas, C.M. *et al.* (1994) Biochemistry **33**:9257.
6. Mei, B. *et al.* (2002) Biochem. J. **364**:137.
7. Smas, C.M. & Sul, H.S. (1996) Int. J. Obes. **20**:S65.

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