Neudesin Human E. coli

Product Data Sheet

Type: Recombinant
Source: E. coli
Species: Human
Other names: Cell immortalization-related protein 2, Neuron-derived neurotrophic factor, Secreted protein of unknown function, SPUF protein, NENF, CIR2, SPUF

Cat. No.:
RD172276100 (0.1 mg)

Description

UniProtKB acc.no. Q9UMX5

Introduction to the Molecule

Human neudesin (alternative names: Cell immortalization-related protein 2, CIR2; Neuron-derived neurotrophic factor, NENF; Secreted protein of unknown function, SPUF; candidate oncogene GIG47) protein comprises 172 amino acid residues including 31 residues of the hypothesised signal sequence. The human neudesin gene was mapped to chromosome 1p33. Neudesin belongs to the MAPR (membrane-associated progesterone receptor) family which includes PGRMC1, PGRMC2, neudesin, and neuferricin, and is a subfamily of the Cyt-b5 family, which consists of heme-binding proteins with a Cyt-b5-like heme/steroid-binding domain in their central regions. Neudesin neurotrophic activity is dependent on the binding of heme to its cytochrome b5-like heme/steroid-binding domain. Mouse neudesin mRNA is expressed abundantly in the developing brain and spinal cord in embryos, but is expressed widely in postnatal tissues including brain, heart, lung, and kidney. In the brain the mRNA was expressed in neurons but not glial cells. The protein exhibited significant neurotrophic activity in primary cultured mouse neurons but no mitogenic activity was observed in primary cultured mouse astrocytes. Neudesin activated the mitogen-activated protein (MAP) and phosphatidylinositol-3 (PI-3) kinase pathways. It has been found that neudesin is expressed in the mouse embryonic cerebral cortex and the neural precursor cells where it significantly promotes neuronal differentiation but inhibits astrocyte differentiation. In addition, it transiently promotes neural cell proliferation in the neural precursor cells during the early stages of development. Over-expression of neudesin has been observed in primary breast tumors as well as other human tumors including carcinomas of the uterine cervix, malignant lymphoma, colon, lung, skin, and leukemia. The ectopic expression of neudesin (GIG47 oncogene) in MCF7 cells promoted invasiveness in the presence of 50% serum and also increased tumorigenicity in in vivo tumor formation assay. The tumorigenesis mechanism involving neudesin might be mediated by the activation of MAPK and PI3K pathways. Neudesin may play a role in the breast tumorigenesis, thus representing a novel target for the treatment of breast cancer. Abundant expression of neudesin in white adipose tissue of adult mice has been reported. Neudesin-hemin significantly suppressed adipogenesis in 3T3-L1 cells. On the other hand, the knockdown of neudesin by RNA interference markedly promoted adipogenesis in 3T3-L1 cells and decreased MAPK activation during adipocyte differentiation. These findings suggest that neudesin plays a critical role in the early stage of adipocyte differentiation. Robust neudesin expression has been observed in hypothalamic nuclei known to regulate food intake, and its expression was altered under the diet-induced obese (DIO) condition relative to the fed state. Hypothalamic neudesin mRNA was regulated by brain-derived neurotrophic factor (BDNF) signaling, itself an important regulator of appetite. Delivery of purified recombinant BDNF into the lateral cerebral ventricle of mice decreased hypothalamic neudesin expression, while pharmacological inhibition of trkB signaling increased neudesin (NENF) mRNA expression. Furthermore, recombinant NENF administered via an intracerebroventricular cannula decreased food intake and body weight and increased hypothalamic Pomc and Mc4r mRNA expression. The appetite-suppressing effect of NENF was abrogated in obese mice fed a high-fat diet, demonstrating a diet-dependent modulation of NENF function. The existence of a hypothetical regulatory circuit involving BDNF, NENF, and melanocortin signaling has been proposed.

Research topic

Energy metabolism and body weight regulation, Neural tissue markers, Oncology

Amino Acid Sequence

MKHHHHHHAS GQTPRPAERG PPVRLFTEEE LARYGGEEED QPIYLAVKGV VFDVTSGKEF YGRGAPYNAL TGKDSTRGVA KMSLDPADLT HDTTGLTAKE LEALDEVFTK VYKAKYPIVG YTARRILNED GSPNLDFKPE DQPHFDIKDE F

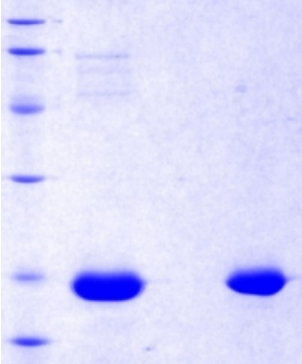
Source

E. coli

Purity

Purity as determined by densitometric image analysis: >95%

SDS-PAGE gel



14% SDS-PAGE separation of Human Neudesin
1. M.W. marker - 14, 21, 31, 45, 66, 97 kDa
2. reduced and boiled sample, 2.5µg/lane
3. non-reduced and non-boiled sample, 2.5µg/lane

Endotoxin

< 1.0 EU/µg

Formulation

Filtered (0.4 µm) and lyophilized in 0.5 mg/mL in 0.05 M phosphate buffer, 0.075 M NaCl, pH 7.4

Reconstitution

Add 200µl of deionized water to prepare a working stock solution of 0.5 mg/mL and let the lyophilized pellet dissolve completely. Filter sterilize your culture media/working solutions containing this non-sterile product before using in cell culture.

Shipping

At ambient temperature. Upon receipt, store the product at the temperature recommended below.

Storage, Stability/Shelf Life

Store the lyophilized protein at -80°C. The lyophilized protein remains stable until the expiry date when stored at -80°C. Aliquot reconstituted protein to avoid repeated freezing/thawing cycles and store at -80°C for long term storage. Reconstituted protein can be stored at 4°C for a week.

Quality Control Test

BCA to determine quantity of the protein.
SDS PAGE to determine purity of the protein.
LAL TEST to determine endotoxin level.

Applications

ELISA, Western blotting

Note

This product is intended for research use only.

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