Data Sheet (Cat.No.TMPY-04403)

TargetMol

NLK/Nemo Like Kinase Protein, Human, Recombinant (His & GST)

General Information

Synonyms: nemo-like kinase;LAK1

Protein Construction: A DNA sequence encoding the human NLK (Q9UBE8) (Val121-Glu527) was fused with the N-terminal polyhistidine-tagged GST tag at the N-terminus. Predicted N terminal: Met

Species: Human

Expression Host: Baculovirus Insect Cells

Accession: Q9UBE8

Molecular Weight: 74.1 kDa (predicted); 73 kDa (reducing conditions)

QC Testing

Biological Activity: The specific activity was determined to be 3 nmol/min/mg using MBP as substrate.

Purity: > 91 % as determined by SDS-PAGE

Endotoxin: < 1.0 EU/μg of the protein as determined by the LAL method.

Formulation: Supplied as sterile 20 mM Tris, 500 mM NaCl, pH 8.0, 10% gly.

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 the product under sterile conditions at -20°C to -80°C. Samples are stable for up to 12 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

Proteins are shipped with blue ice.

Protein Background

Nemo-like kinase contains 1 protein kinase domain and belongs to the protein kinase superfamily, CMGC Ser/Thr protein kinase family, and MAP kinase subfamily. It also contains a TQE activation loop motif in which autophosphorylation of the threonine residue (Thr-298) is sufficient for kinase activation. As a serine/threonine-protein kinase, Nemo-like kinase regulates some transcription factors with key roles in cell fate determination. It is a positive effector of the non-canonical Wnt signaling pathway, acting downstream of WNT5A, MAP3K7/TAK1, and HIPK2. Activation of this pathway causes binding to and phosphorylation of the histone methyltransferase SETDB1. The NLK-SETDB1 complex subsequently interacts with PPARG, leading to methylation of PPARG target promoters at histone H3K9 and transcriptional silencing. The resulting loss of PPARG target gene transcription inhibits adipogenesis and promotes osteoblastogenesis in mesenchymal stem cells (MSCs). Nemo-like kinase also is a

negative regulator of the canonical Wnt/beta-catenin signaling pathway.

Reference

Smit L,et al.(2004) Wnt activates the Tak1/Nemo-like kinase pathway. J Biol Chem. 279(17): 17232-40.
Yasuda J,et al.(2004) Nemo-like kinase suppresses a wide range of transcription factors, including nuclear factor-kappaB. Cancer Sci. 95(1):52-7.
Yasuda J,et al.(2003) Nemo-like kinase induces apoptosis in DLD-1 human colon cancer cells. Biochem Biophys Res Commun. 308(2):227-335.
Ishitani T,et al.(2003) Regulation of lymphoid enhancer factor 1/T-cell factor by mitogen-activated protein kinase-related Nemo-like kinase-dependent phosphorylation in Wnt/beta-catenin signaling. Mol Cell Biol. 23(4):1379-89.