PRODUCT INFORMATION

DKK1 (human, recombinant)
Item No. 32045

Overview and Properties

Synonym: Dickkopf-related Protein 1
Source: Active recombinant human C-terminal His-tagged DKK1 expressed in HEK293 cells
Amino Acids: 32-266
Uniprot No.: O94907
Molecular Weight: 25.8 kDa
Storage: -80°C (as supplied)
Stability: ≥1 year
Purity: ≥90% estimated by SDS-PAGE
Supplied in: Lyophilized from sterile PBS, pH 7.4
Endotoxin Testing: <1.0 EU/μg, determined by the LAL endotoxin assay
Bioactivity: See figures for details

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images

SDS-PAGE Analysis of DKK1. This protein has a calculated molecular weight of 25.8 kDa. It has an apparent molecular weight of approximately 45 kDa by SDS-PAGE under reducing conditions due to glycosylation.

DKK1 Inhibits Wnt3a-induced Alkaline Phosphatase Production by C3H10T1/2 Cells. The EC_{50} value for this effect is approximately 0.1-0.4 μg/ml in the presence of 10 ng/ml of mouse Wnt3a.
Dickkopf-related protein 1 (DKK1) is a glycoprotein and a member of the DKK family of proteins.\(^1\) DKK1 contains a signal sequence and N- and C-terminal conserved cysteine-rich domains connected by a non-conserved linker region. The C-terminal domain contains a colipase fold domain that is sufficient for its biological activity. DKK1 is a secretory protein that is expressed in osteoblasts, osteocytes, skin, placenta, prostate, and platelets.\(^2\) It binds to lipoprotein receptor-related protein 5/6 (LRP5/6) to prevent it from forming a β-catenin-stabilizing complex with Wnt and Frizzled, thus inactivating Wnt-β-catenin signaling. In the presence of the DKK1 co-receptor Kremen, LRP6 is endocytosed to prevent its interaction with Wnt and Frizzled. DKK1 is also a target of the β-catenin-TCF transcription factor complex forming a negative feedback loop for Wnt signaling.\(^3\) Dkk1 knockout in mice is embryonic lethal with embryos lacking anterior head structures, as well as having ectopic and fused digits and fused vertebrae.\(^4\) Mice heterozygous for Dkk1 have increased bone density, and overexpression of Dkk1 in mice leads to osteopenia.\(^5\) DKK1 expression is increased in a variety of cancers and plasma levels are correlated with the development of osteolytic lesion formation in patients with multiple myeloma.\(^1,5\) Activation of DKK1 in cancer cells in vitro and in vivo can inhibit growth, however, DKK1 inhibition can reduce tumor growth in certain mouse xenograft models, suggesting a cell- or tissue-specific effect.\(^5,6\) DKK1 expression is increased in the brain of Alzheimer’s disease mouse models, cerebrospinal fluid and plasma of patients with Alzheimer’s disease, and in postmortem brain derived from Alzheimer’s disease patients.\(^7\) Cayman’s DKK1 (human, recombinant) protein can be used for cell-based assay applications. This protein consists of 235 amino acids, has a calculated molecular weight of 25.8 kDa, and a predicted N-terminus of Thr32 or Ser35 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is approximately 45 kDa due to glycosylation.

References