

DESCRIPTION

Source Chinese Hamster Ovary cell line, CHO-derived Dkk-1 protein
Thr32-His266
Accession # XP_005565907.1

N-terminal Sequence Analysis Thr32

Predicted Molecular Mass 26 kDa

SPECIFICATIONS

SDS-PAGE 35-39 kDa, under reducing conditions

Activity Measured by its ability to inhibit Wnt induced TCF reporter activity in HEK293 human embryonic kidney cells. The ED₅₀ for this effect is 12.5-100 ng/mL.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >90%, 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 500 µg/mL in PBS.

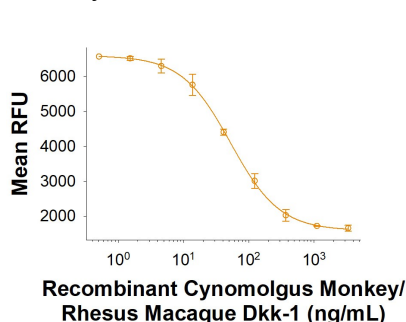
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

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.

DATA

Bioactivity



Recombinant Cynomolgus Monkey/Rhesus Macaque Dkk-1 (Catalog # 10450-DK) inhibits Recombinant Mouse Wnt-3a (Catalog # 1324-WN) induced TCF reporter activity in HEK293 human embryonic kidney cells. The ED₅₀ for this effect is 12.5-100 ng/mL.

BACKGROUND

Dickkopf related protein 1 (Dkk-1) is the founding member of the Dickkopf family of proteins that includes Dkk-1, -2, -3, -4, and a related protein, Soggy (1, 2). Dkk proteins are secreted proteins that contain two conserved cysteine-rich domains separated by a linker region. Each domain contains ten cysteine residues (1-3). Mature Cynomolgus/rhesus Dkk-1 is a 40 kDa glycosylated protein that shares 99% amino acid sequence identity with human Dkk-1. Dkk-1 and Dkk-4 are well documented antagonists of the canonical Wnt signaling pathway (1, 2). This pathway is activated by Wnt engagement of a receptor complex composed of the Frizzled proteins and one of two low-density lipoprotein receptor-related proteins, LRP5 or LRP6 (4). The C-terminal cysteine-rich domain 2 (CRD2) of Dkk-1 has been shown to interact with LRP5 or LRP6 (5). Dkk-1 antagonizes Wnt by forming ternary complexes of LRP5/6 with Kremen1 or Kremen2 (4, 6). Dkk-1/LRP6/Krm2 complex internalization has been shown to down-regulate Wnt signaling (4, 6). Dkk-1 is expressed throughout development and antagonizes Wnt-7a during limb development (7, 8). Other sites of expression include developing neurons, hair follicles and the retina of the eye (9, 10). The balance between Wnt signaling and Dkk-1 inhibition is critical for bone formation and homeostasis (11). Insufficient or excess Dkk-1 activity in bone results in increased or decreased bone density, respectively (9, 12). In adults, Dkk-1 is expressed in osteoblasts and osteocytes, and neurons. Cerebral ischemia induces Dkk-1 expression, which contributes to neuronal cell death (13).

References:

1. Krupnik, V.E. et al. (1999) *Gene* **238**:301.
2. Niehrs, C. (2006) *Oncogene* **25**:7469.
3. Bullock, C.M. et al. (2004) *Mol. Pharmacol.* **65**:582.
4. Mao, B. et al. (2001) *Nature* **411**:321.
5. Kimura, H. et al. (2016) *J Clin Invest.* **126**:7.
6. Mao, B. et al. (2002) *Nature* **417**:664.
7. Kemp, C. et al. (2005) *Dev. Dyn.* **233**:1064.
8. Adamska, M. et al. (2004) *Dev. Biol.* **272**:134.
9. Li, J. et al. (2006) *Bone* **36**:754.
10. Verani, R. et al. (2006) *J. Neurochem.* **101**:242.
11. Pinzone, J.J. et al. (2009) *Blood* **113**:517.
12. Morvan, F. et al. (2006) *J. Bone Miner. Res.* **21**:934.
13. Cappuccio, I. et al. (2005) *J. Neurosci.* **25**:2647.