

DESCRIPTION

Source *Spodoptera frugiperda*, Sf 21 (baculovirus)-derived human Dkk-1 protein
Thr32-His266
Accession # O94907

N-terminal Sequence Analysis Thr32

Structure / Form Monomer, biotinylated via sugars

Predicted Molecular Mass 26 kDa (unlabeled)

SPECIFICATIONS

SDS-PAGE 33-38 kDa, reducing conditions

Activity Measured by its ability to inhibit Wnt induced TCF reporter activity in HEK293 human embryonic kidney cells. Biotinylated Recombinant Human Dkk-1 (Catalog # BT5439/CF) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a (Catalog # 5036-WN). The ED₅₀ for this effect is 10-60 ng/mL.

Endotoxin Level <1.0 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE with silver staining.

Formulation Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 100 µg/mL in PBS.

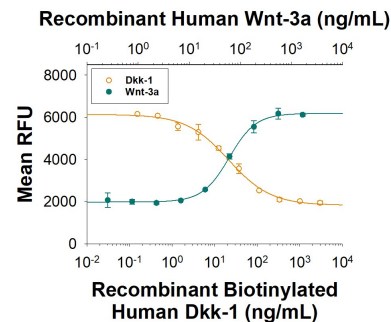
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

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 Human Wnt-3a (Catalog # 5036-WN) induces a dose responsive increase in Wnt reporter activity in HEK293 cells (green circles). Recombinant Biotinylated Human Dkk-1 (Catalog # BT5439/CF) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a. The ED₅₀ for this effect is 10-60 ng/mL (orange circles).

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 (CRDs) separated by a linker region. Each domain contains ten cysteine residues (1-3). Mature human Dkk-1 is a 40 kDa glycosylated protein that shares 83% amino acid sequence identity with mouse and rat Dkk-1. Dkk-1 is a well-characterized antagonist of Wnt/beta-Catenin signaling (1, 2, 4, 5). 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, LRP-5 or LRP-6 (4). Crystallographic studies have shown that Dkk-1 interacts with LRP-6 as a bipartite inhibitor, with both CRDs binding the extracellular domain of LRP-6 simultaneously (4, 6-8). Dkk-1/LRP-6/Krm2 complex internalization has been shown to down-regulate Wnt signaling (4, 9). Dkk-1 is expressed throughout development and antagonizes Wnt-7a during limb development (10, 11). Other sites of expression include developing neurons, hair follicles, and the retina (12, 13). The balance between Wnt signaling and Dkk-1 inhibition is critical for bone formation and homeostasis (14). Insufficient or excess Dkk-1 activity in bone results in increased or decreased bone density, respectively (12, 15). In adults, Dkk-1 is expressed in osteoblasts and osteocytes, and neurons. Cerebral ischemia induces Dkk-1 expression, which contributes to neuronal cell death (16). Dkk-1 also likely has a complex role in cancer, as it has been shown to act as a tumor suppressor and also to promote metastasis (17-19).

References:

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