Recombinant Human Dkk-1

Catalog Number: 5439-DK

DESCRIPTION

Source	*Spodoptera frugiperda*, *Sf* 21 (baculovirus)-derived human Dkk-1 protein Thr32-His266 Accession # O94907
N-terminal Sequence Analysis	Thr32
Predicted Molecular Mass	25.8 kDa

SPECIFICATIONS

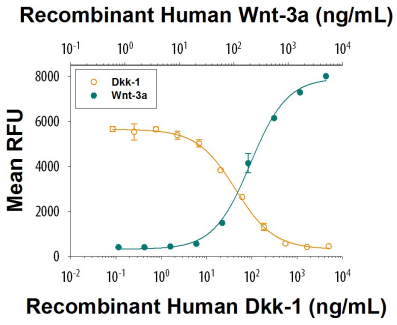
SDS-PAGE	33-38 kDa, reducing conditions
Activity	Measured by its ability to inhibit Wnt induced TCF reporter activity in HEK293 human embryonic kidney cells. Recombinant Human Dkk-1 (Catalog # 5439-DK) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a (Catalog # 5036-WN). The ED_{50} 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 with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in PBS containing at least 0.1% human or bovine serum albumin.
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.

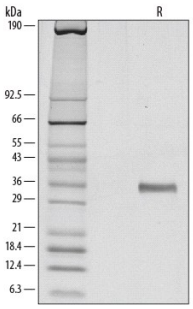
DATA

Bioactivity



Recombinant Human Wnt-3a (Catalog # 5036-WN) induces a dose responsive increase in Wnt reporter activity in HEK293 cells (green circles). Recombinant Human Dkk-1 (Catalog # 5439-DK) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a. The ED_{50} for this effect is 10-60 ng/mL (orange circles).

SDS-PAGE



1 µg/lane of Recombinant Human Dkk-1 was resolved with SDS-PAGE under reducing (R) conditions and visualized by silver staining, showing major bands at 33-38 kDa. Multiple bands in gel are due to variable glycosylation.

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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 human Dkk-1 is a 40 kDa glycosylated protein that shares 86%, 87%, 90% and 91% aa sequence identity with mouse, rat, rabbit and bovine Dkk-1, respectively. It also shares 42% and 36% aa identity with human Dkk-2 and Dkk-4, respectively. 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). Dkk-1 antagonizes Wnt by forming ternary complexes of LRP5/6 with Kremen1 or Kremen2 (4, 5). Dkk-1/LRP6/Krm2 complex internalization has been shown to down-regulate Wnt signaling (4, 5). Dkk-1 is expressed throughout development and antagonizes Wnt-7a during limb development (6, 7). Other sites of expression include developing neurons, hair follicles and the retina of the eye (8, 9). The balance between Wnt signaling and Dkk-1 inhibition is critical for bone formation and homeostasis (10). Insufficient or excess Dkk-1 activity in bone results in increased or decreased bone density, respectively (8, 11). In adults, Dkk-1 is expressed in osteoblasts and osteocytes, and neurons. Cerebral ischemia induces Dkk-1 expression, which contributes to neuronal cell death (12).

References:

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