Recombinant Rat Dkk-1

Catalog Number: 4010-DK

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived rat Dkk-1 protein Ser23-His270, with a C-terminal 6-His tag Accession # NP_001099820
N-terminal Sequence Analysis	Ser23
Predicted Molecular Mass	27.6 kDa

SPECIFICATIONS

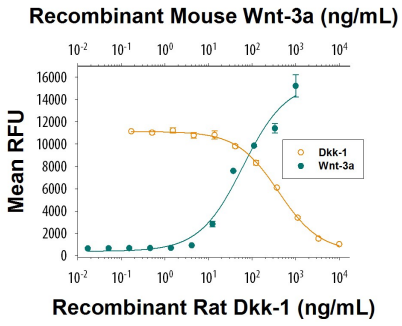
SDS-PAGE	38-42 kDa, reducing conditions
Activity	Measured by its ability to inhibit Wnt induced TCF reporter activity in HEK293 human embryonic kidney cells. Recombinant Rat Dkk-1 inhibits a constant dose of 100 ng/mL of Recombinant Mouse Wnt-3a (Catalog # 1324-WN). The ED_{50} for this effect is 50-300 ng/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
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 sterile 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 Mouse Wnt-3a (Catalog # 1324-WN) induces a dose responsive increase in Wnt reporter activity in HEK293 cells (green circles). Recombinant Rat Dkk-1 (Catalog # 4010-DK) inhibits a constant dose of 100 ng/mL of Recombinant Mouse Wnt-3a. The ED_{50} for this effect is 50-300 ng/mL (orange circles).

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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 rat Dkk-1 is a 40 kDa glycosylated protein that shows 96%, 86% and 82% aa sequence identity with mouse, human and cow Dkk-1, respectively. It also shows 41% and 34% aa identity with rat 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 downregulate 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. Insufficient or excess Dkk-1 activity in bone results in increased or decreased bone density, respectively (8, 10). In adults, Dkk-1 is expressed in osteoblasts and osteocytes, and neurons. Neuronal expression appears to be required for ischemic neuronal death (11).

References:

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