Recombinant Human Dkk-2

Catalog Number: 6628-DK

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived Met1-Ile259 Accession # NP_055236
N-terminal Sequence Analysis	Ser26
Predicted Molecular Mass	25.8 kDa

SPECIFICATIONS

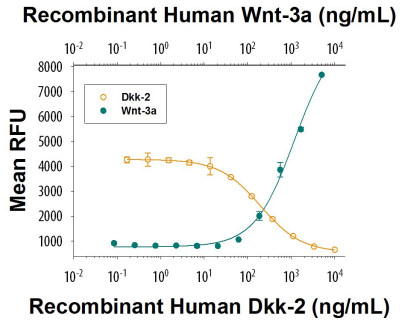
SDS-PAGE	32-36 kDa, reducing conditions
Activity	Measured by its ability to inhibit Wnt induced TCF reporter activity in HEK293 human embryonic kidney cells. Recombinant Human Dkk-2 (Catalog # 6628-DK) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a (Catalog # 5036-WN). The ED_{50} for this effect is 50-300 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, 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 and EDTA with BSA as a carrier protein. 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 Human Dkk-2 (Catalog # 6628-DK) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a. The ED_{50} for this effect is 50-300 ng/mL (orange circles).

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BACKGROUND

Dickkopf related protein 2 (Dkk-2) is a member of the Dickkopf family of secreted Wnt modulators (1-3). Dkk proteins contain a signal peptide and two conserved cysteine-rich domains that are separated by a linker region. The second cysteine-rich domain mediates Dkk-2 binding activities, and its interaction with β-propeller domains of LRP-5/6 has been mapped (2-4, 7). The 226 amino acid (aa), ~35 kDa mature human Dkk-2 shares 96%, 97%, 97%, 97%, 97% and 98% aa identity with mouse, rat, canine, equine, bovine and porcine Dkk-2, respectively. Mouse Dkk-2 can activate the canonical Wnt signaling pathway in *Xenopus* embryos, showing evolutionary conservation of function (5). Dkk proteins modify Wnt engagement of a receptor complex composed of a Frizzled protein and a low-density lipoprotein receptor-related protein, either LRP-5 or LRP-6 (3). Also, Kremen-1 and Kremen-2 are high affinity receptors for Dkk-1 and Dkk-2 (9). When LRP-6 is over-expressed, direct high-affinity binding of Dkk-2 to LRP can enhance canonical Wnt signaling (6-8). However, when Dkk-2 and LRP-6 form a ternary complex with Kremen-2, Wnt signaling is inhibited due to internalization of Dkk-2/LRP6/Krm2 complexes (9, 10). Thus, depending on the cellular context, Dkk-2 can either activate or inhibit canonical Wnt signaling (3). In contrast, binding of Dkk-1 or Dkk-4 to LRP is consistently antagonistic (3). Dkk proteins are expressed in mesenchymal tissues and control epithelial transformations. Dkk-2 expression has been studied most in bone and eye, although it is expressed as early as periimplantation in mice (11). Mouse Dkk-1 or Dkk-2 deficiencies have opposite effects on bone homeostasis, despite down-regulating Wnt antagonism in both cases (12, 13). Dkk-2 expression is induced by Wnts in bone, and is thought to enhance bone density by promoting terminal differentiation of osteoblasts and mineral deposition (12). In contrast, Dkk-1 negatively regulates late osteoblast proliferation, which limits bone density (13). Dkk-2-deficient mice are blind, exhibiting faulty differentiation of corneal epithelium and ectopic blood vessels in the periocular mesenchyme (14, 15).

References:

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