

**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/CF) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a (Catalog # 5036-WN). The ED<sub>50</sub> 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.

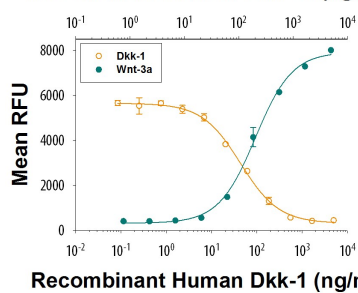
**Stability & Storage** Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 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**

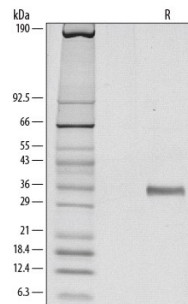
**Bioactivity**

**Recombinant Human Wnt-3a (ng/mL)**



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/CF) inhibits a constant dose of 500 ng/mL of Recombinant Human Wnt-3a. The ED<sub>50</sub> 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.

**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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