

General Information

Synonyms	Dickkopf-1; dickkopf-related protein 1; Dkk1; Dkk-1; hDkk-1; SKdickkopf-1 like
Accession #	O94907
Source	Human embryonic kidney cell, HEK293-derived human Dkk1 protein
	Met 2-His 266
Predicted Molecular weight	26.6 kDa

Components and Storage

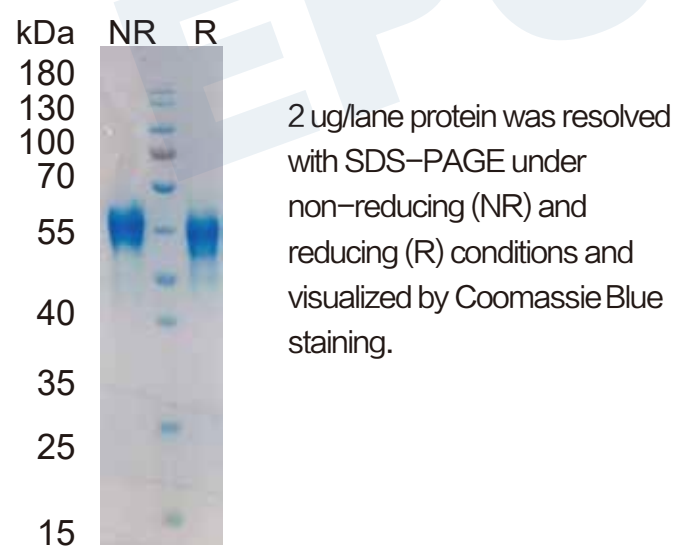
Formulation	Solution protein. Dissolved in sterile PBS buffer . This solution can be diluted into other aqueous buffers. Centrifuge the vial prior to opening.
Storage and Stability	Avoid repeated freeze-thaw cycles. It is recommended that the protein be aliquoted for optimal storage. 12 months from date of receipt, -20 to -70 °C as supplied.

Shipping Shipping with dry ice

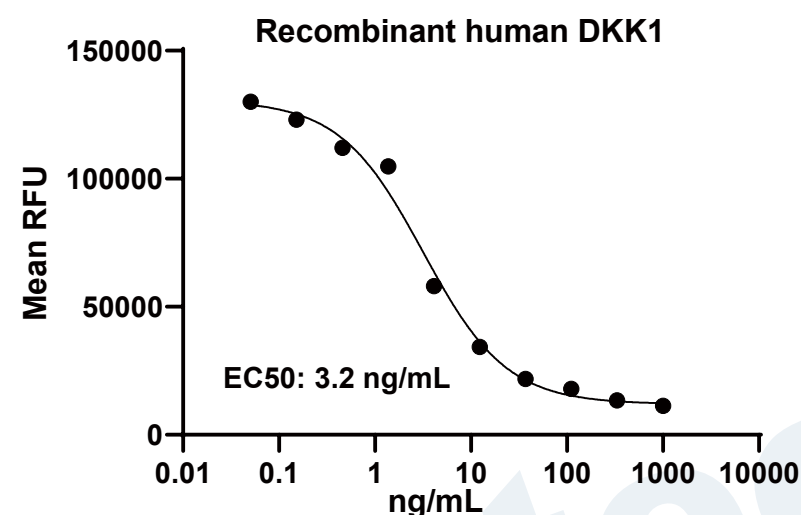
Quality

Purity	> 95%, determined by SDS-PAGE.
Endotoxin Level	<0.010 EU per 1 ug of the protein by the LAL method.
Activity	Measured by its ability to inhibit Wnt induced TCF reporter activity in HEK293 human embryonic kidney cells. The EC50 for this effect is approximately 1-8 ng/ml.

SDS-PAGE



Bioactivity



Measured by its ability to inhibit Wnt induced TCF reporter activity in HEK293 human embryonic kidney cells.

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).

Reference

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