Recombinant *Drosophila* Decapentaplegic/DPP

Catalog Number: 159-DP/CF

DESCRIPTION

Source	*E. coli*-derived Asp457-Arg588 (Gln473His) & (Pro474Ala), with an N-terminal Met Accession # NP_722813
N-terminal Sequence Analysis	Met
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	14.8 kDa (monomer)

SPECIFICATIONS

Activity	Measured by its ability to induce Mad phosphorylation in S2 *Drosophila* cells transfected with Mad. Approximately 3 µg/mL of recombinant *Drosophila* DPP and higher can effectively induce Mad phosphorylation. Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Nakamura, K. *et al.* (1999) Exp. Cell Res. **250**:351. The ED_{50} for this effect is 0.5-2 µg/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in Acetonitrile and TFA. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile 4 mM HCl.
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.

BACKGROUND

Decapentaplegic (Dpp) is one of at least five TGF-β superfamily ligands identified in the *Drosophila* genome. Dpp, a functional orthologue of mammalian BMP-2 and BMP-4, is a morphogen and plays an essential role in *Drosophila* development. Dpp regulates embryonic dorsal-ventral polarity and is required for gut morphogenesis and outgrowth and patterning of imaginal disks. Similar to other TGF-β family ligands, Dpp is synthesized as a large proprotein which is proteolytically processed at the dibasic cleavage site to release the carboxy-terminal domain. Biologically active Dpp is a disulfide-linked homodimer of the carboxy-terminal 132 amino acid residues that contains the characteristic conserved cysteine residues involved in the formation of the cysteine knot and the interchain disulfide bond. Cellular responses to Dpp have been shown to be mediated by the ligand-induced formation of heteromeric complexes of the *Drosophila* type I, Thick Veins (Tkv), and type II, Punt, serine/threonine kinases. The activated receptor complex induces the phosphorylation of the prototypical Smad, Mad, and subsequent translocation of the Mad-Medea complex to the nucleus where they regulate the transcription of target genes. Secreted extracellular Dpp antagonists, including the short-gastrulation (Sog) and twisted gastrulation (TSG), which bind Dpp and regulate its availability, have been identified.

References:

1. Raftery, L.A. and D.J. Sutherland (1999) Dev. Biol. **210**:251.
2. Ruberte, E. *et al.* (1995) Cell **80**:890.

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