ADVANCED TARGETING SYSTEMS

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Noggin Human Recombinant
GROWTH FACTOR

Catalog Number: PRP-475
Quantity: 5 micrograms, 20 micrograms, 1 milligram
Format: Sterile-filtered white lyophilized (freeze-dried) powder
Host: *E. coli*

Background:
The secreted polypeptide noggin, encoded by the NOG gene, binds and inactivates members of the transforming growth factor-beta (TGF-beta) superfamily signaling proteins, such as bone morphogenetic protein-4 (BMP4). By diffusing through extracellular matrices more efficiently than members of the TGF-beta superfamily, noggin may have a principal role in creating morphogenic gradients. Noggin appears to have pleiotropic effect, both early in development as well as in later stages. It was originally isolated from Xenopus based on its ability to restore normal dorsal-ventral body axis in embryos that had been artificially ventralized by UV treatment. The results of the mouse knockout of noggin suggest that it is involved in numerous developmental processes, such as neural tube fusion and joint formation. Recently, several dominant human NOG mutations in unrelated families with proximal symphalangism (SYM1) and multiple synostoses syndrome (SYNS1) were identified; both SYM1 and SYNS1 have multiple joint fusion as their principal feature, and map to the same region (17q22) as NOG. All NOG mutations altered evolutionarily conserved amino acid residues. The amino acid sequence of human noggin is highly homologous to that of Xenopus, rat and mouse.

Specificity and Preparation:
Noggin Human Recombinant produced in *E.Coli* is a non-glycosylated, non-disulfide-linked homodimer consisting of two 206 amino acid polypeptide chains, having a total molecular mass of approximately 46.2 kDa (each chain 23.1 kDa). Noggin is purified by proprietary chromatographic techniques. Purity is greater than 95.0% as determined by SDS-PAGE. It is lyophilized from a 0.2μm filtered solution in 30% CH_3CN, 0.1% TFA. The ED_{50} was determined by its ability to inhibit 5.0 ng/ml of BMP-4 induced alkaline phosphatase production by ATDC-5 chondrogenic cells. The expected ED_{50} for this effect is 0.05-0.08 μg/ml of Noggin. Protein quantitation was carried out by two independent methods: (1) UV spectroscopy at 280 nm using the absorbency value of 1.76 as the extinction coefficient for a 0.1% (1mg/ml) solution. This value is calculated by the PC GENE computer analysis program of protein sequences (IntelliGenetics). (2) Analysis by RP-HPLC, using a standard solution of Noggin as a Reference Standard.
Amino acid sequence: MQHYLHIRPAPSDNLPLVDLIEHPDPIFDPKEKDLNETLLRSLLGGH
YDPGFMATSPPEDRPGGGGGAAGGAEDLAELDQLLRQRPSGAMPS
EIKGLEFSEGLAQGKKQRLSKKLRRKLQMWLWSQTFCPVLYAWNDL
GSRFWPRYVKVGSCFSKRSCSVPEGMVCKPSKSVHLTVLRWRCQR
RGQRCGWIPIQYPIISECKCSC

Usage and Storage:
Gently spin down material before use; 5-10 seconds in a microfuge should be adequate. Reconstitute in 10 mM HAc to a concentration of 0.1-1.0 mg/mL. Further dilutions should be made in appropriate buffered solutions. Lyophilized material although stable at room temperature for 3 weeks, should be stored desiccated below -18° C. Upon reconstitution material should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Avoid repeated freezing and thawing.

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