

PPH58

PODS[®] Human BMP-7Description

The product contains the polyhedrin protein co-crystallized with Human BMP-7. BMP-7, also known as Bone Morphogenetic Protein 7, osteogenic protein-1 or OP-1, is a member of the TGF superfamily of proteins. Akin to the other functionally and structurally related bone morphogenetic proteins (BMPs), BMP-7 is involved in cartilage and bone formation and signals through serine/threonine kinase receptors. Additionally, BMP-7 plays a role in a variety of other organs and organ systems such as during development of the kidney and prostate. Furthermore, BMP-7 has been identified as an anti-fibrotic molecule, antagonizing TGF β 1 and the emergence of fibroblasts derived from endothelial cells in fibrosis of kidney, lung, liver, heart and peritoneum. BMP7 was also implicated in the promotion of neuroregeneration following brain ischemia. The BMP-7 protein is usually a disulfide linked homodimer and highly conserved across animal species; for example, the amino acid sequence of human, mouse and rat BMP-7 are 98% identical. However, mature BMP-7 can also form disulfide-linked heterodimers with either BMP-2 or BMP-4. These heterodimeric complexes have shown increased effects and range of activity compared to BMP-7 homodimers.

Length	432 aa
Molecular Weight	109 kDa
Source	<i>Spodoptera frugiperda (Sf9) cell culture</i>
Accession Number	P18075

Usage Recommendation

PODS[®] are pure protein co-crystals consisting of polyhedrin, a structural scaffold protein, and a cargo protein. Under the action of proteases, which degrade the scaffold protein, PODS provide sustained release of the cargo protein. Any cargo growth factor molecule contained within PODS is not available to cells and not bioactive. Once released, growth factors become available to bind cells and are bioactive. The concentration to which a growth factor accumulates in cell culture media (or in-vivo environment) will depend on the amount of cargo (contained in PODS) added, the rate of cargo release, and the subsequent rate of degradation of the released cargo protein. As a rule of thumb, in the presence of 10% serum, peak levels of available growth factors released from PODS are reached within 24-48 hours. Typically, at this point 20% of the growth factor cargo initially contained within the PODS is present in a soluble form and available to bind cells. For example, if PODS containing 100 ng of cargo are added to 10 ml of cell culture media containing 10% serum, it can be expected that 20 ng will be released after 24 hours to give a concentration of available growth factor of 2 ng/ml. The concentration that you need for a particular application will likely be lower than the equivalent conventional growth factor. This is because PODS are better at maintaining minimum growth factor concentrations. Pre-incubating PODS with serum for 24 hours prior to culture will ensure that available growth factor is immediately present. Ultimately, the amount of PODS growth factor that is optimal for a particular experiment should be optimized empirically.

Specifications

Alternative Names BMP7, Bone Morphogenetic Protein 7, OP-1, OP1

Endotoxin Level <0.06 EU/ml as measured by gel clot LAL assay

Formulation PODS® were lyophilized from a volatile solution

AA Sequence

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MADVAGTSNR DFRGREQRLF NSEQYNYNNS KNSRPSTSLY KKAGFMHVRS LRAAAPHSFV
ALWAPLFLLR SALADFSLDN EVHSSFIHRR LRSQERREMQ REILSILGLP HRPRPHLQGK
HNSAPMFMLD LYNAMAVEEG
GGPGGQGFSY PYKAVFSTQG PPLASLQDSH FLTDADMVMS FVNLVEHDKE FFHPRYHHRE
FRFDLSKIPE GEAVTAAEFR IYKDYIRERF DNETFRISVY QVLQEHLGRE SDFLLDSRT
LWASEEGWLV FDITATSNHW VVNPRHNLGL QLSVETLDGQ SINPKLAGLI GRHGPQNKQP
FMVAFFKATE VHFRSIRSTG SKQRSQNRSK
TPKNQEALRM ANVAENSSSD QRQACKKHEL YVSFRDLGWQ DWIIAPEGYA AYYCEGECAP
PLNSYMNATN HAIVQTLVHF INPETVPKPC CAPTQLNAIS VLYFDDSSNV ILKKYRNMVV
RACGCH*
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Preparation and Storage

Reconstitution

Ensure the PODS® are resuspended in buffer by pipetting up and down immediately before aliquoting. PODS® may be reconstituted at 100 ug/ml in water. 20% glucose has a buoyant density closer to PODS® and can be useful for slowing sedimentation when aliquoting. PODS® are highly stable when stored in aqueous solution (pH range 6 - 8).

Stability and Storage

Upon receipt, store at 4°C. PODS® are stable for at least 1 year when dry and 6 months when resuspended.