Miltenyi Biotec

Human BMP-4
research grade

Contents

1. Description

Products Human BMP-4, research grade.

Recombinant human bone morphogenetic protein 4.

Content in µg	Order no.
10	130-110-921
25	130-111-168

Biological activity The ED_{50} is ≤25 ng/mL corresponding to an activity of $\geq 4 \times 10^4$ U/mg.

▲ **Note:** The ED_{50} is determined by alkaline phosphatase assay using mouse C2C12 cells according to Cheng *et al.*[1]

Primary structure Homodimer, covalently linked glycosylated polypeptide chains (116 amino acid residues).

Molecular mass 26.2 kDa.

Source Produced in *Pichia pastoris*.

Product format Lyophilized from a filtered (0.2 µm) buffer solution.

Stabilizer Mannitol and trehalose.

Purity >95% as determined by SDS-PAGE analysis.

Endotoxin level Low endotoxin (<1.0 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.

Storage Lyophilized Human BMP-4, research grade should be stored at –20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at –20 °C or below. Avoid repeated freeze-thaw cycles.

Reconstitution It is recommended to reconstitute lyophilized Human BMP-4, research grade with deionized sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 100 µL. Further dilutions should be prepared with 0.1% bovine serum albumin (BSA) or human serum albumin (HSA) in phosphate-buffered saline.

1.1 Background information

Bone morphogenetic protein 4 (BMP-4) is a member of the bone morphogenetic protein family, which is part of the TGF-β superfamily. BMP-4 plays an important role in early differentiation of the embryo and in establishing of a dorsal-ventral axis. It is involved in bone and cartilage development and has been shown to play a role in the differentiation of sympathetic neurons. In synergy with Activin A it promotes the formation of definitive endoderm in human embryonic stem cells (ESCs). Furthermore, BMP-4 supports LIF (leukaemia inhibitory factor) as a positive factor for mouse ESC self-renewal and can replace the requirement of serum. The amino acid sequences of mature human BMP-4 shares 98% identity with mouse or rat BMP-4.

1.2 Applications

Human BMP-4 can be used for a variety of applications, including:

- Differentiation of human ES and iPS cells.
- Maintenance of mouse ESCs under serum-free conditions.

Optimal concentration for a specific application should be determined by a dose-response experiment.

2. References

1. Cheng, H. *et al.* (2003) Osteogenic activity of the fourteen types of human bone morphogenetic proteins (BMPs). J Bone Joint Surg Am 85 (A8): 1544–1552.

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