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Product Information

Noggin, human
recombinant, expressed in HEK 293 cells
suitable for cell culture

Product Number **N17001**
Storage Temperature –20 °C

Synonyms: NOG, SYM1, SYNS1, SYNS1A

Product Description

Recombinant human noggin is expressed in human 293 cells as a glycoprotein with a calculated molecular mass of 23 kDa. This protein is manufactured in human cells using an all-human production system, with full chemically defined ingredients and with no serum. The human cells expression system allows human-like glycosylation and folding, and often supports better stability of the protein in culture.

Noggin is a secreted protein that inhibits the binding of bone morphogenetic proteins (BMPs) to their cognate receptor.[1] It is a 232 amino acid-secreted glycosylated protein, which forms covalently linked homodimers and has high affinity for BMP-4.[2] hESC cultured with noggin (in medium or incorporated into the extracellular matrix) form denser colonies compared to normal hESC cultures, suggesting the presence of noggin promotes better growth.[3] Noggin can be incorporated as a medium supplement for maintaining stem cells in a pluripotent state, for short-term culture experiments.[3] Noggin does not trigger differentiation towards a neuronal lineage. Furthermore, when incorporated into the extracellular matrix, noggin prevented spontaneous differentiation during the time period examined.[3] In a surgically induced knee osteoarthritis model in mice, expression of noggin mRNA was lost from the articular cartilage, which correlated with loss of BMP-2/4 and pSMAD1/5/8, an indicator of active BMP signaling.[4]

This product is lyophilized from phosphate buffered saline (PBS), pH 7.4, with no carrier proteins. It is aseptically filled.

The biological activity of recombinant human noggin was tested in culture by measuring its ability to inhibit recombinant human BMP-4-induced alkaline phosphatase production by ATDC5 cells (human erythroleukemic indicator cell line).

ED_{50}: ≤10 ng/mL

The ED_{50} is defined as the effective concentration of noggin that elicits a 50% decrease in alkaline phosphatase secretion in a cell based bioassay.

Purity: ≥98% (SDS-PAGE)

Endotoxin level: ≤1 EU/μg noggin (LAL)

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Briefly centrifuge the vial before opening. It is recommended to reconstitute the protein in sterile, double-distilled water to a final concentration of 100 μg/ml.

Storage/Stability

Store the lyophilized product at –20 °C. The product is stable for at least 2 years as supplied. After reconstitution, it is recommended to store the protein in working aliquots at –20 °C.

References

1. Rifas, L., The role of noggin in human mesenchymal stem cell differentiation. *J. Cell Biochem*., **100(4)**, 824-34 (2007).
2. Groppe, J. et al., Structural basis of BMP signalling inhibition by the cystine knot protein Noggin. *Nature*, **420(6916)**, 636-42 (2002).
3. Chaturvedi, G. et al., Noggin maintains pluripotency of human embryonic stem cells grown on Matrigel. *Cell proliferation*, **42(4)**, 425-433 (2009).
4. Yu, X. et al., Expression of Noggin and Gremlin1 and its implications in fine-tuning BMP activities in mouse cartilage tissues. *J. Orthop. Res*., (2016).