

Human SHH (C24II)

premium grade

10 µg	130-095-721
25 µg	130-095-723
100 µg	130-095-727
1000 µg	130-095-730

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1. Description

Components	Human SHH (C24II), premium grade: Purified recombinant human sonic hedgehog (C24II).
Sizes	10 µg, 25 µg, 100 µg, 1000 µg.
Biological activity	The ED ₅₀ is ≤0.5 µg/mL* corresponding to a specific activity of ≥2×10 ³ U/mg.
Primary structure	Single, non-glycosylated polypeptide chain (175 amino acid residues) without N-terminal methionine.
Molecular mass	19.7 kDa.
Source	Produced in <i>E. coli</i> .
Product format	Lyophilized from a 0.2 µm filtered buffer solution.
Stabilizer	Trehalose and mannitol.
Purity	>97% as determined by SDS-PAGE analysis.
Endotoxin level	Low endotoxin (<0.1 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.
Storage	Lyophilized Human SSH (C24II), premium 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 SSH (C24II) 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 (PBS).

* The ED₅₀ is determined by alkaline phosphatase assay using mouse C3H10T1/2 fibroblasts according to Nakamura *et al.*¹

1.1 Background information

Sonic hedgehog (SHH) is involved in a wide variety of embryonic developmental events, including neurogenesis, limb development, hematopoiesis, and gut formation. Besides their role as morphogens, hedgehog family members have also been shown to act as mitogens, cell survival factors, and axon guidance factors and to influence tissue regeneration within the adult.

SHH is synthesized as a precursor which is auto-catalytically cleaved into a 19 kDa N-terminal domain (SHH-N) and a 25 kDa C-terminal domain (SHH-C). SHH-N is responsible for the signaling activity of hedgehog proteins, while SHH-C acts as a cholesterol transferase and covalently attaches a cholesterol molecule to SHH-N. The lipid modified SHH-N displays enhanced activity.

Human SHH (C24II) corresponds to the mature SHH-N domain and carries a Cys to Ile Ile substitution resulting in a lipophilic moiety and therefore an increased activity².

1.2 Applications

- Human SSH (C24II) can be used for the expansion or differentiation of various cell types, predominantly of human and mouse embryonic stem cells, but also of adult stem cells and mesenchymal cells and others.

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

2. References

1. Nakamura, T. *et al.* (1997) Induction of osteogenic differentiation by hedgehog proteins. *Biochem. Biophys. Res. Commun.* 237: 465–469.
2. Taylor, F.R. *et al.* (2001) Enhanced potency of human Sonic hedgehog by hydrophobic modification. *Biochemistry* 40: 4359–4371.

All protocols and data sheets are available at www.miltenyibiotec.com.

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