

Human SHH (C24II) premium grade

Contents

1. Description

1.1 Background information

1.2 Applications

2. References

1. Description

Products	Human SHH (C24II), premium grade. Recombinant human sonic hedgehog (C24II).										
	<table border="1"> <thead> <tr> <th>Content in µg</th><th>Order no.</th></tr> </thead> <tbody> <tr> <td>10</td><td>130-095-721</td></tr> <tr> <td>25</td><td>130-095-723</td></tr> <tr> <td>100</td><td>130-095-727</td></tr> <tr> <td>1000</td><td>130-095-730</td></tr> </tbody> </table>	Content in µg	Order no.	10	130-095-721	25	130-095-723	100	130-095-727	1000	130-095-730
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10	130-095-721										
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100	130-095-727										
1000	130-095-730										
Biological activity	<p>The ED₅₀ is ≤0.5 ng/mL corresponding to an activity of ≥2×10³ U/mg. Lot-specific activities are stated in the Certificate of Analysis (www.miltenyibiotec.com/certificates).</p> <p>▲ Note: The ED₅₀ is determined by alkaline phosphatase assay using mouse C3H10T1/2 fibroblasts according to Nakamura <i>et al.</i>¹</p>										
Primary structure	Single, non-glycosylated polypeptide chain (175 amino acid residues).										
Molecular mass	19.7 kDa.										
Source	Produced in <i>E. coli</i> .										
Product format	Lyophilized from a filtered (0.2 µm) buffer solution.										
Stabilizer	Mannitol and trehalose.										
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 SHH (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 SHH (C24II), premium 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

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 autocatalytically 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 activity.

1.2 Applications

Human SHH (C24II) can be used for a variety of applications including:

- Expansion or differentiation of various cell types, mainly human and mouse embryonic stem cells, but also adult stem cells and mesenchymal cells.

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.

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