

DESCRIPTION

Source *E. coli*-derived mouse Desert Hedgehog/Dhh protein
Cys23-Gly198 (Cys23Ile-Ile), with an N-terminal Met
Accession # Q61488

N-terminal Sequence Analysis Met

Predicted Molecular Mass 20.1 kDa

SPECIFICATIONS

Activity Measured by its ability to induce alkaline phosphatase production by MC3T3-E1 mouse preosteoblast cells.
The ED₅₀ for this effect is <20 µg/mL.

Endotoxin Level <0.01 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Lyophilized from a 0.2 µm filtered solution in PBS and DTT. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 500 µg/mL in sterile PBS.

Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Desert Hedgehog (Dhh) belongs to the highly conserved Hedgehog family of proteins which are involved in multiple developmental processes. Hedgehogs are synthesized as 45 kDa precursors that are cleaved autocatalytically. The 19 kDa N-terminal fragment remains membrane associated due to its cholesterol and palmitate modifications. Binding of this fragment to Patched receptors results in the loss of Patched repression of Smoothened signaling (1 - 4). Dhh binds both Patched and Patched 2 as well as Hedgehog interacting protein (Hip) (5). Within the N-terminal peptide, mouse Dhh shares 97% and 100% amino acid (aa) sequence identity with human and rat Dhh, respectively. It shares 74% aa sequence identity with mouse Indian (Ihh) and Sonic hedgehog (Shh) (6, 7). Dhh is produced by Sertoli cells and is required for testis development and spermatogenesis (8, 9). It induces steroidogenic factor 1 which is instrumental in promoting Leydig cell differentiation (10, 11). It also promotes the deposition of basal lamina surrounding seminiferous tubules (8). In humans, mutations of Dhh are associated with pure gonadal dysgenesis (12). Dhh is expressed in the female by ovarian granulosa cells and the corpus luteum (13). Its upregulation in human ovarian cancer correlates positively with proliferative index and negatively with prognosis (14). Dhh is also expressed by Schwann cells and is upregulated following nerve injury (15, 16). It induces the expression of Patched and Hip in nerve fibroblasts and promotes the formation of the connective tissue sheath surrounding peripheral nerves (15).

References:

1. van den Brink, G.R. (2007) *Physiol. Rev.* **87**:1343.
2. Riobo, N.A. and D.R. Manning (2007) *Biochem. J.* **403**:369.
3. Porter, J.A. *et al.* (1995) *Nature* **374**:363.
4. Carpenter, D. *et al.* (1998) *Proc. Natl. Acad. Sci.* **95**:13630.
5. Pathi, S. *et al.* (2001) *Mech. Dev.* **106**:107.
6. Echelard, Y. *et al.* (1993) *Cell* **75**:1417.
7. Chang, D.T. *et al.* (1994) *Development* **120**:3339.
8. Pierucci-Alves, F. *et al.* (2001) *Biol. Reprod.* **65**:1392.
9. Bitgood, M.J. *et al.* (1996) *Curr. Biol.* **6**:298.
10. Yao, H.H.-C. *et al.* (2002) *Genes Dev.* **16**:1433.
11. Park, S.Y. *et al.* (2007) *Endocrinology* **148**:3704.
12. Canto, P. *et al.* (2004) *J. Clin. Endocrinol.* **89**:4480.
13. Russell, M.C. *et al.* (2007) *Biol. Reprod.* **77**:226.
14. Chen, X. *et al.* (2007) *Cancer Sci.* **98**:68.
15. Parmantier, E. *et al.* (1999) *Neuron* **23**:713.
16. Bajestan, S.N. *et al.* (2006) *J. Neurobiol.* **66**:243.