

**hMidkine Protein**  
**Human Midkine, Recombinant, E. coli**  
**Catalog # PG10024**

**Specification**

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**hMidkine Protein - Product Information**

**hMidkine Protein - Additional Information**

**Storage**  
-20°C

**Precautions**  
hMidkine Protein is for research use only and not for use in diagnostic or therapeutic procedures.

**hMidkine Protein - Protocols**

Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

**hMidkine Protein - Images**

**hMidkine Protein - Background**

Midkine is a heparin-binding multifunctional protein that has anti-apoptotic properties and promotes cell migration and neurite process formation. Midkine is induced by tissue injury, and is believed to participate in tissue repair.<sup>1,2</sup> Midkine has various activities related to neurogenesis; it enhances the survival of embryonic neurons, migration of neurons, neurite outgrowth,<sup>1</sup> and clustering of acetylcholine receptors at the neuromuscular junction. Midkine has in vitro neurotrophic activity for dorsal root ganglia and midbrain dopaminergic neurons.<sup>3-5</sup> Midkine activities in tissue repair processes include enhanced migration of macrophages, neutrophils, and osteoblasts.<sup>6</sup> Midkine promotes fibrinolytic activity of endothelial cells,<sup>7</sup> and synthesis of collagens and glycosaminoglycans in fibroblasts.<sup>8,9</sup> In the adult, Midkine expression is restricted to certain tissues.<sup>2,11</sup> However, protein expression is induced during inflammation, repair, and oncogenesis.<sup>2,11</sup> High expression of Midkine is observed in a variety of human carcinomas (gastric, colon, pancreatic, lung, breast, urinary bladder).<sup>12</sup> Serum or urinary levels of truncated Midkine mRNA, with a high specificity for tumor tissues may be used as tumor markers.<sup>13</sup>

**hMidkine Protein - References**

- 1 . Kaneda, N. et al. (1996) J. Biochem. (Tokyo) 119, 1150. 2 . Muramatsu, T. (2002) J. Biochem.

(Tokyo) 132,359.3 . Asai, T.et al.(1997)Biochem. Biophys. Res. Commun. 236,66.4 . Muramatsu, T.(1995)Nihon Shinkei Seishin Yakurigaku Zasshi. 15,275.5 . Haynes, L.et al.(2001)Prog. Brain Res. 132,313.6 . Hayashi, K.et al.(2001)Glycoconj. J. 18,401.7 . Choudhuri, R.et al.(1997)Cancer Res. 57,1814.8 . Kadomatsu, K.(2000)Nippon Rinsho. 58,1337.9 . Kurosawa, N.et al. (2000)Eur. J. Biochem. 267,344.10 . Kadomatsu, K.et al.(1990)J. Cell Biol. 110,607.11 . Kurtz, A.et al.(1995)Crit. Rev. Oncog. 6,151.12 . Shimada, H.et al.(2003)Cancer Sci. 94,628.13 . Shimada, H. et al.(2003)Oncol. Rep. 10,411.