MAPTrix™-L Laminin mimetic mussel adhesive protein

Overview

Laminin is a major component of basement membranes, and has numerous biological activities including promotion of cell adhesion, migration, chemotaxis, growth, and differentiation, including neurite outgrowth[1].

Laminins consist of one α, one β, and one γ chain, and each chain in the laminin molecule consists of rod-like, globular, and coiled coil regions[1,2].

The largest chain is α chain, which contains the long arm on the C-terminal end and a short arm on the N-terminal end. The C-terminal end of the long arm consists of the LG1–5 domains, which are involved in interactions with cellular receptors such as integrins and dystroglycans. The N-terminal end of the short arm is also capable of binding to integrin receptors[3].

Characteristics

MAPTrix™-L is produced in Kollodis' proprietary *E.coli* expression system and purified using an ISO compliant manufacturing process.

Molecular Weight:

- ~24,000 dalton

Formula:

- The product is supplied as a 0.2 mg/mL, 0.5 mg/mL (2.5mg or 5.0mg vial) or 1.0mg/mL aqueous solution in pure water.
- Lyophilized powder is also available upon request

Solubility:

- Soluble in a variety of buffers, including water, under a wide range of pH conditions (pH=2~9.0)
- Note: Buffers of media containing Ca^{2+} or Mg^{2+} added to MAPTrix™ may result in the formation of insoluble aggregates. This will not occur if the buffering capacity of the diluent brings the pH to 9.0 or lower.

Product Description

The major laminin's integrin receptors are at least eight integrins (α1β1, α2β2, α3β1, α6β1, α6β4, α7β1, α9β1, αvβ3) can bind to laminins[4].

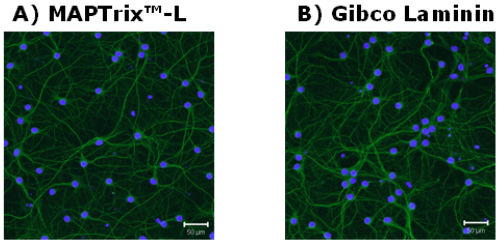
MAPTrix™-L provides α3β1, α6β1, αvβ3, syndecan and dystroglycan binding peptide motifs, derived primarily from N-terminal and globular domain of laminin α1, α3 and α5.

MAPTrix™-L has been demonstrated to have biological activities similar to those of the naturally occurring whole laminin molecule in primary rat hippocampus culture.

Quality Control

· Purity	93% by SDS PAGE
· pH	6.0 ~ 7.5
· Endotoxin	Less than 20 EU/mL per LAL assay.
· Sterility	Tested and found negative for the presence of bacteria, fungi and mycoplasma
· Functionality	The biological activity of laminin peptide is determined in a cell culture assay under serum free conditions

Figure1: Primary nerve cell cultured on MAPTrix™-L coated surface in serum free conditions



Rat hippocampal cells were primary cultured on MAPTrix™-L and Gibco™ Mouse laminin coated 24-well plates under serum free conditions for 14 days. The MAPTrix™-L showed comparable efficacy for pyramidal dendrite formation of primary nerve cells as compared with mouse-derived natural laminin.

Coating Procedure:

- Transfer desired volume of MAPTrix™-L solution from the vial to a dilution vessel as required.
- Dilute to desired concentration using sodium bicarbonate buffer solution ($NaHCO_3$: 500mM at final concentration) for uniform & even coated surface. A recommended working concentration is 0.1mg/mL. (*Note: Use the recommendation as guidelines to determine the optimal coating conditions for your culture system.*)
- Add appropriate amount of diluted MAPTrix™-L solution to the culture surface
- Incubate at room temperature or 37°C, covered, for 1-3 hours. Best uniform coated surface with 1-2 hr incubation.
- Rinse the coated surfaces carefully with sterile medium or PBS. Avoid scratching the coated surface.
- Refer to the Standard Coating Protocol for details, which can be downloaded at www.kollodis.com

Products

Cat. No	Peptide Motif	Receptor	Cat. No	Peptide Motif	Receptor
162041~4	RQVFQVAYIIIKA (α1 chain)	αvβ3, α5β1	163691~4	GIIFFL (α5 chain)	unknown
162241~4	IKVAV (α1 chain)	αvβ3, α3β1, α6β1,	164111~4	RYVVLPR (β1 chain)	heparin
162261~4	NRWHSIYITRFG (α1 chain)	α6β1	164141~4	YIGSR (β1 chain)	α1β1, α3β1
162291~4	TWYKIAFQRNRK (α1 chain)	α6β1	164211~4	LGTIPG (β1 chain)	67 kDa protein
162321~4	RKRLQVQLSIRT (α1 chain)	syndecan	164421~4	KAFDITYVRLKF (γ1 chain)	αvβ3
162931~4	KNSFMALYLSKGRLVFALG (α3)	syndecan	164601~4	RNIAEIIKDI (γ1 chain)	unknown

For our entire laminin mimetic product listing, please visit our website at www.kollodis.com

Storage Conditions:

- Stable for a minimum of 6 months from day of shipment when stored at 2-8°C
- Remaining, unused solution of MAPTrix™ ECM can be stored at 2-8°C with appropriate sealing for 6 months. ***DO NOT FREEZE*** the remaining solution. However, the remaining material is recommended to be used within 1 month after the vial has been opened.

References

1. Miner JH, et al., Laminin functions in tissue morphogenesis. Annu Rev Cell Dev Biol. 2004; 20:255-84.
2. Colognanto H, Form and function: the laminin family of heterotrimers.Dev Dyn. 2000; 218(2). p213-34.
3. Madeleine Durbeej, Laminins Cell and Tissue Research (2010) 339(1), 259-268
4. Kim BJ, et al., Mussel adhesive protein fused with cell adhesion recognition motif triggers integrin-mediated adhesion and signaling. J Biomed Mater Res A. (2010) 94(3):886-92

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For volume ordering or bulk pricing, please contact Kollodis BioSciences or your local distributor.