MAPTrix™-V Vitronectin mimetic mussel adhesive protein

Overview

Vitronectin is a multi-functional plasma and extracellular matrix protein that is used to promote cell attachment, spreading, proliferation, migration, and differentiation in a variety of normal and neoplastic cells such as fibroblasts, human carcinoma of the cervix and breast, and rat glioma[1,3,4].

Vitronectin is found as a mixture of 75 kD and 65 kD polypeptides, the 65 kD most likely being the result of endogenous proteolysis of the 75 kD polypeptide[2].

It contains the amino acid structural motif, Arg-Gly-Asp (RGD), which is involved in cell attachment. It also contains heparin binding domains that bind complement factor C7, complement factor C8, and complement factor C9.

Characteristics

MAPTrix™-V 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 (in 2.5mg or 5.0mg vials) or 1.0 mg/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.- or lower.

Product Description

The major vitronectin's integrin receptors are αvβ3 and αvβ5[2].

MAPTrix™-V provides αvβ3 and/or αvβ5, and heparin binding peptide motifs in the Mefp based mussel adhesive protein.

The RGDV and heparin binding motif have been demonstrated to promote cell adhesion, spreading, migration and proliferation in various cell lines[1,2,3].

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 vitronectin peptide is determined in a cell culture assay under serum free conditions

Coating Procedure:

- Transfer desired volume of MAPTrix™-V 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™-V 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
168011~4	FRHRNRKGY	heparin	168031~4	RGDV	αvβ3, αvβ5
168021~4	KKQRFRHRNRKGYRSQ	heparin			

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. Preissner KT, et al., Vitronectin in vascular context: facets of a multitalented matricellular protein. Semin Thromb Hemost. 2011; 37(4):408-24.
2. Felding-Habermann B, et al., Vitronectin and its receptors. Curr Opin Cell Biol. 1993; 5(5):864-8.
3. Asha Shekaran, et al., Extracellular matrix-mimetic adhesive biomaterials for bone repair. Journal of Biomedical Materials Research Part A 96A, 1, 261–272, 2011
4. Kumaran GS, et al., Biomimeticity in tissue engineering scaffolds through synthetic peptide modifications-Altering chemistry for enhanced biological response. J Biomed Mater Res Part A. 96A, 2, 477–491, 2011
5. Dettin M. et al., Biomaterials. Effect of synthetic peptides on osteoblast adhesion. 2005 26(22):4507-15.

Ordering Information

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