



Technical Data Sheet

MAPTrix[®]-C Collagen peptide containing mussel adhesive protein

Product Information

Catalog Number 316311, 316321

Introduction Collagen can be divided into several families according to the types of structure formed: fibril-forming interstitial collagens (types I, II, III and V); and, basement membrane collagens (type IV). Each type contains multiple isoforms.

Several collagens play a key role in cell adhesion and are important for maintaining normal tissue architecture and function such as bone strength and platelet activation. Collagen Type I and Type IV are commonly used in vitro as a substrate to enhance adherence and proliferation of many cell types.^{1,2}

Serum provides the necessary growth and attachment factors for optimal culture maintenance. However, the presence of some of these factors may also generate unwanted experimental results and therefore need to be reduced or omitted. MAPTrix[®] offers a growth surface that promotes cell plating efficiency, improves morphology, and enhances cell proliferation in low-serum or serum-free conditions.

Description and Applications

MAPTrix[®]-C is a recombinant mussel adhesive protein based coating kit for cell culture or for use as a modifier of a variety of substrates for biological applications. The mussel adhesive protein contains collagen-derived peptide such as the GPKGAAGEPGKP (Type I) or the GEFYFDLRLKGDK (Type IV) motif at the N terminal which has demonstrated similar bioactivity to natural collagen in rat primary liver hepatocytes cultures under serum free conditions.

This coating kit is designed for simple surface modification and/or biofunctionalization with increased cell attachment & growth efficacy for a variety of cell lines. MAPTrix[®]-C is generally used as a thin coating; however, higher concentrations of MAPTrix[®]-C may allow for longer term attachment. Recommended coating protocols are provided only as guidelines. Each laboratory should empirically determine the optimal conditions for their unique application.

This product can be used in combination with other MAPTrix[®] products where combinations of bioligands are required. Simple mixtures of MAPTrix[®] products can generate a combination of bioligands for synergistic cell adhesion and spreading^{3, 4}.

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Features

- Ready-to-use formula
- Control of surface density & spatial distribution of collagen motif on the surface of a substrate with high reproducibility & reliability
- Fully compatible with existing cell culture protocols
- Easy surface coating/modification with a combination of bioligands

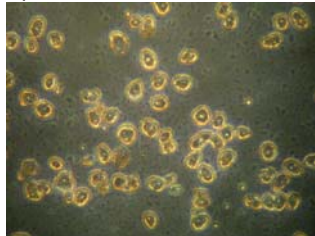
Quality Control

- Quality control in accordance with ISO & USP guidelines
- Purity > 90% by SDS PAGE
- Sterility & endotoxin testing strictly adheres to USP guidelines
- Animal protein-free & *E.coli*-protein free

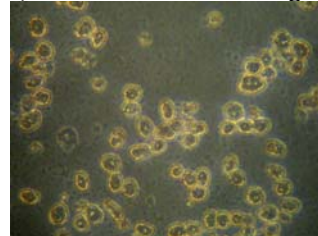
Cell Culture Assay

1. Cell growth assay

a) MAPTrix®-C



b) BD BioCoat™ Collagen I

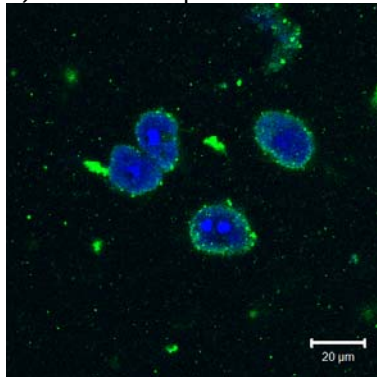


Light micrographs of primary rat liver hepatocytes cultured in a serum-free, supplemented medium for one day: (a) 24-well plates coated with MAPTrix®-C; and, (b) BD BioCoat™ Collagen I, respectively (Magnification=100x). Assay results showed that the hepatocyte cells grew well on both MAPTrix®-C and BD Collagen I.

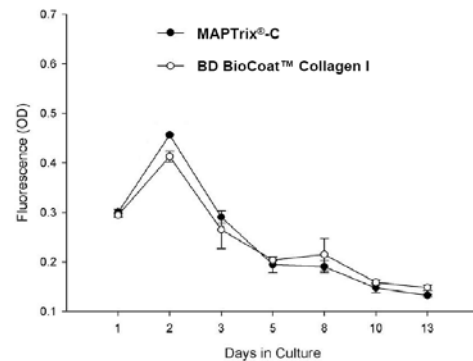
2. Cell viability assay

Cytochrome P450 1A1 expression was detected in rat liver hepatocytes cultured on both MAPTrix®-C and BD BioCoat™ Collagen I coated plates. Immunofluorescence showed prominent cytosol deposit of cytochrome P450 1A1 in hepatocyte cultured on MAPTrix®-C coated plates indicating that the hepatocyte functioned well with MAPTrix®-C.

a) CYP450 Expression



b) Time course of CYP450 activity



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Time-course effects of MAPTrix®-C and BD BioCoat Collagen I on cytochrome P450 1A1 activity showed similar patterns. In conclusion, cell attachment, growth, and viability assay demonstrated that MAPTrix®-C has a similar bioactivity to naturally occurring collagen.

- Storage**
- Stable for a minimum of 6 months from day of shipment when stored at 2-8°C
 - The remaining material is recommended to be used within 1 month after the vial has been opened.
- Related Products**
- For fibronectin, MAPTrix®-F (Cat. #: 316111, 316121, 316131)
 - For laminin, MAPTrix®-L (Cat. #: 316211, 316221)
 - For vitronectin, MAPTrix®-V (Cat. #: 316411)
- References**
1. Heino, J., Matrix Biol., 2000, 19, 319-323
 2. Kleinman, H.K., et al., J. Cell Biol., 1981, 88, 473-485
 3. Redick, et al., J. Cell Biol., 2000, 149, 521-527.
 4. García, et al., Biochem. J., 2002, 41, 9063-9069.
- Technical Assistance**
- Contact the Kollodis technical support via:
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