CellAdhere™ Type I Collagen, Bovine, Solution

Purified bovine collagen for tissue engineering research, cell culture, and biochemistry

Catalog # 07001 50 mL

STEMCELL™ TECHNOLOGIES
Scientists Helping Scientists™ | WWW.STEMCELL.COM
TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM
FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

Product Description

Type I Collagen is the most abundant type of collagen in the human body and is a major structural protein prevalent in skin, bone, tendon, and other fibrous connective tissues (Bornstein et al.). All collagens are characterized by a secondary protein structure consisting of three polypeptide chains wrapped around one another in a triple helical arrangement (Tanzer). The different types of collagen vary in the primary amino acid sequence of their polypeptide chains, with type I collagen comprising two identical α1(I) chains and one α2(I) chain that spontaneously form the triple helix in solution (Heino).

CellAdhere™ Type I Collagen, Bovine, Solution is prepared from collagen extracted from bovine hide and contains a high monomer content. Product contains about 97% type I collagen with the remainder composed of type III collagen. It is supplied at a concentration of approximately 6 mg/mL (0.6%) aqueous solution in 0.01 M HCl (pH at about 2.0). Starting material was isolated from a closed herd and purified using a highly controlled manufacturing process. This process contains validated steps to ensure inactivation of possible prion and/or viral contaminants.

This product is ideal for coating surfaces with a thin layer of protein to support cell attachment, or for use as a firm gel in 3D cell culture applications (Zaman et al.; Roeder et al.). The optimal protein concentration may vary depending on the cell type being used, and therefore must be titrated for best results.

Properties

Storage: Store at 2 - 8°C.

Shelf Life: Stable for 6 months from date of receipt.

Contains:
- Approximately 97% type I collagen
- Type III collagen

Handling / Directions For Use

PREPARING COLLAGEN-COATED TISSUE CULTUREWARE (2D COATING)

1. Dilute CellAdhere™ Type I Collagen, Bovine, Solution with sterile water or 0.01 N HCl to obtain desired concentration.
   NOTE: Different dilutions will need to be tested to determine the optimal concentration required for each culture system. Typical coating concentrations range between 50 - 100 µg/mL.
2. Mix gently until everything has been solubilized.
3. Add desired amount of diluted Type I Collagen solution to the cultureware to be coated. For example, use 1 mL to coat a 35 mm Culture Dish (Catalog #27100).
4. Cover coated cultureware to protect from contamination.
5. Incubate at room temperature (15 - 25°C) for 1 - 2 hours.
6. Aspirate excess solution. Avoid scratching the coated surface.
7. Rinse coated cultureware with sterile D-PBS Without Ca++ and Mg++ (Catalog #37350) or culture medium.
8. Use coated cultureware immediately. Alternatively, keep sterile and store at 2 - 8°C damp or air dried.

PREPARING 3D COLLAGEN GELS (3D COATING)

1. Slowly add 1 part of chilled CellAdhere™ Type I Collagen, Bovine, Solution to 8 parts of chilled, sterile D-PBS, 10X Concentrate Without Ca++ and Mg++ (10X PBS; Catalog #37354) or 10X culture medium. Mix gently by swirling.
   For example, add 1 mL of chilled CellAdhere™ Type I Collagen, Bovine, Solution to 8 mL of chilled, sterile 10X PBS.
2. Slowly add sterile 0.1 M NaOH to reach a pH of 7.2 - 7.6.

3. Add sterile water to reach a final volume of 10 parts. Following the example in step 1, add sterile water to reach a final volume of 10 mL.
   NOTE: If not used immediately, store diluted Type I Collagen solution at 2 - 8°C. This prevents gelation.
4. Add desired amount of diluted Type I Collagen solution on the surface of the cultureware to be coated.
5. Place coated cultureware at 37°C and allow 1.5 - 2 hours for gel to form.

References

Bornstein P & Sage H. (1980) Structurally distinct collagen types. Annu Rev Biochem 49: 957–1003.
Heino J. (2007) The collagen family members as cell adhesion proteins. Bioessays 29(10): 1001–10.
Roeder BA et al. (2002) Tensile mechanical properties of three-dimensional type I collagen extracellular matrices with varied microstructure. J Biomech Eng 124(2): 214–22.
Tanzer ML. (1973) Cross-linking of collagen. Science 180(4086): 561–6.
Zaman MH et al. (2006) Migration of tumor cells in 3D matrices is governed by matrix stiffness along with cell-matrix adhesion and proteolysis. Proc Natl Acad Sci USA 103(29): 10889–94.