Atelocollagen is a highly evaluated purified collagen with superior properties and functionality, developed for three-dimensional cell culturing in various research uses including tissue engineering. It is available in following formats:

- **Acidic or neutral collagen solutions** are added to cell culture, allowing in-vivo like functions, or to generate collagen fibrils.

- Atelocollagen is polymerized to yield a variety of collagen materials:
  - **Porous sponge** contains holes where cells can penetrate and proliferate three-dimensionally.
  - **Honey comb sponge** contains holes for special culture applications.
  - **Collagen membranes** and **Microspheres** are useful format for cell cultures.
  - **Permeable collagen sheets** suit interaction assays and cell migration tests.

Note: All these products should not be used in the human.

**High purity**
Atelocollagen is obtainable with a high degree of purity. This feature is due to the protease treatment, which when used to extract atelocollagen breaks down other protein contamination.

**Low antigenicity**
Atelocollagen, that is obtained by protease treatment, is low in immunogenicity because it is free from telopeptides, an amino acid sequence at both N and C termini, which confers most of the collagen’s antigenicity.

**High biocompatibility**
Atelocollagen is biodegradable. Therefore, atelocollagen is used in a variety of fields such as medicine, medical devices and cosmetics as a raw material, and research in cell culture.

**High plasticity**
Atelocollagen can be engineered into many different physical shapes such as films, sponge-like structure, string-like configurations, powders and gels. It is possible to leverage the special properties of atelocollagen to produce the most appropriate configuration for any application. For example, atelocollagen is normally insoluble in water with neutral pH, but this characteristic can be altered to make it soluble. It is also possible to use atelocollagen equally as a coagulant or as an anticoagulant, and it is also possible to control the rate at which it is absorbed by the body.

**High safety**
KOKEN ensures the safety of materials through the precise management of each and every bovine used for atelocollagen production:

1. The bovine dermis we use comes from Australia which has a national livestock traceability system in place, and we only use calves aged six months or younger.
2. We do not use animal feed derived from bovine and sheep but only BSE-free, safe feed.
3. We only use the dermal layer of the skin, which is classified as belonging to the “no detectable infectivity” category (WHO Guidelines on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies). We take great care to prevent this layer from coming into contact with hazardous sites including the brain and the spine during collection.
4. We are able to track bovine used for KOKEN’s collagen to their birthplace, and we periodically conduct field research.
Collagen Sponge for Cell Culturing: CS-35
The collagen porous sponge is prepared from an insoluble type I collagen that is derived from bovine Achilles tendon. Cells can penetrate into the sponge and proliferate three-dimensionally. This technique is very useful for tissue engineering studies. [More information]

CS-35 Collagen sponge disks, for cell culturing
φ 32mm × 1mm (for 35mm dishes), sterile
CS-35, 5pieces 50pieces [Price]
Store Room Temperature (Z)

Collagen Sponge for Research Use: CLS-01
Collagen sponge, CLS-01*, for research use,
pH 3.0, 90mm × 80mm × 5mm, sterile (store at room temperature)
CLS-01, 1piece [Price]
Store Room Temperature (Z)
* Since the product will be manufactured upon order receipt please inquire about the date of delivery.
Cell Culture Matrix, “Honeycomb” Collagen Sponge: CSH-10
The 'Honeycomb' collagen sponge has a structure in which uniform pores (250-400 \( \mu \)m) are arranged densely in one direction, into which cells can penetrate and proliferate. This structure facilitates the ready supply of nutrients to the cells inside the sponge, and releases metabolic wastes and biochemical products. Cells can proliferate and fill the lumen to form a uniform cell mass. The 'Honeycomb' collagen sponge is prepared from highly purified bovine dermal type I Atelocollagen and can be degraded by collagenase.

Honeycomb collagen sponge
CSH-10, 100mg
CSH-96, Price
Store Room Temperature (Z)
Size: 3 \( \times \) 3 \( \times \) 2 mm/sponge
Total surface area: about 2 cm\(^2\)/mg
Weight per volume: 12-13 mg/mL

Collagen Microspheres for Tissue Culturing: MIC-00
a cell culture substrate prepared from fibril-forming type I Atelocollagen to offer a cellular environment similar to living system. It can be used for the culturing, such as fibroblasts, epithelial cells and osteoblasts, and has proven effective for the long-term maintenance of cell cultures.

Collagen microspheres for tissue culturing 200-400 \( \mu \)m
MIC-00, 15mL Price
Concentration: about 3,800 cm\(^2\)/15 ml, About 3,000,000 particles, sterile
store 4°C, Do not freeze (I)

Permeable Collagen Membrane for research use: CLF-01
Collagen membrane for research is a highly purified, bovine dermal type I atelocollagen applicable to various purposes. Do not use for the human.

Permeable Collagen membrane for research use* pH 3.0,
100 mm \( \times \) 90 mm \( \times \) 35 \( \mu \)m, Sterile 1 sheet/box
CLF-01 Price
Store at +4°C.
* Since the product will be manufactured upon order receipt please inquire about the date of delivery.
Permeable Collagen Membrane for Tissue Culture: MEM-01
Specially developed from highly purified bovine dermal type I Atelocollagen for single and double layer tissue culture studies. It is particularly suitable for studying the molecular interactions between two different cell types by culturing on both sides of the membrane. It is potentially useful for the study of artificial organs and in the emerging field of tissue engineering.

Advantages:
Since the collagen membrane is fully permeable for small molecules, allowing free passage of amino acids and small molecules, cells cultured on it can absorb nutrients, excrete metabolic wastes and release biochemical products across the membrane. The system therefore permits the long-term maintenance of cells similar to in vivo systems. The cells also have the advantage of utilizing its polarity for the exchange of molecules across the membrane. The system is particularly useful for cell differentiation and tissue engineering studies. Two different cell types can be cultured on both sides of the membrane, hence it is particularly useful for cell and molecular interaction studies. The permeable collagen membrane is very suitable for basic studies and for the maintenance of artificial skin, artificial pancreas and other vital organs.

More information.

Collagen membrane for tissue culture φ 33mm, Sterile  MEN-01 , 5pieces            Price
Store at -20°C

Collagen Membrane for Tissue Culture: CM-6, CM-24
Collagen membrane for tissue culturing is prepared from highly purified type I atelocollagen. Due to membrane transparency, microscopic observation of the cells is possible while culturing. Study of cell interaction is possible without a co-culture. Cell culturing on a collagen membrane creates a natural environment that resembles in-vivo systems. Amino acids and other small molecular weight compounds can move freely though the permeable collagen membrane.

Collagen membranes are manufactured under stringent quality control and sterilized, available for use with both 6 and 24 well culture plates.

More information.

Applications:
● Study of interacting between cells
● Fundamental researches of the artificial internal organs
● Screening of efficacy of medicine
● Study of cell metabolism and metabolism mechanism

Collagen membrane for Tissue culturing for 6-well culture plates, sterile CM-6 , 24pcs. Price
Collagen membrane for Tissue culturing for 24-well culture plates, sterile CM-24 , 24pcs.
Store at -20°C.
Collagen Solution for Tissue Culture, Acidic collagen solution (I-PC, I-AC)
Collagen Solution for Tissue Culture, Neutral collagen solution

Collagen solutions for tissue culturing is a highly purified collagen solution. The acid solutions (pH3.0) are available as 0.3% and 0.5% solutions. I-PC is made from Bovine dermis pepsin-solubilized type I collagen (Atelocollagen), while I-AC is made from Bovine dermis acid-solubilized type I collagen. Acidic solutions, I-PC and I-AC, form fibrils when being neutralized at 37°C. They are stored at +4°C. The Neutral solution (pH7.4) is available as 0.2% solution. It is made from Bovine dermis pepsin-solubilized type I collagen (Atelocollagen) and forms fibrils at 37°C. They are stored at -20°C.

Advantages:
- sterile product
- collagen extracted from bovine dermis, solubilized and purified by original methods.

Functional expression of cells cultured with Koken Collagen:
Cell cultures with collagen solutions can express cellular functions like in vivo cells. Collagen not only plays the role of physical scaffold for the proliferating cells, but also enhances cell adhesion, proliferation and function. Collagen creates a natural extracellular environment that is important for cell communication and layer formation. The synthesizing capability of albumin, a function shared among hepatocytes, is maintained at a high level when cultured on plates coated with collagen solution. When skin fibroblasts are cultured three-dimensionally on collagen gel, the whole collagen contracts from the contractibility of the cells producing a dermis model that closely resembles the structure of live dermis.

More information

<table>
<thead>
<tr>
<th>Acidic collagen solution for tissue culturing, I-PC,</th>
<th>Price</th>
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<tbody>
<tr>
<td>- pH 3.0, concentration: 0.3 %, Sterile</td>
<td>IPC-30 50 ml</td>
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<tr>
<td>- pH 3.0, concentration: 0.5 %, Sterile</td>
<td>IPC-50 50 ml</td>
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<tr>
<th>Acidic collagen solution for tissue culturing, I-AC,</th>
<th>Price</th>
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<td>- pH 3.0, concentration: 0.3 %, Sterile</td>
<td>IAC-30 50 ml</td>
</tr>
<tr>
<td>- pH 3.0, concentration: 0.5 %, Sterile</td>
<td>IAC-50 50 ml</td>
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<tr>
<th>Neutral collagen solution or tissue culture,</th>
<th>Price</th>
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<tbody>
<tr>
<td>Eagle's MEM,pH 7.4, concentration: 0.2 %, Sterile</td>
<td>MEN-02 20 ml</td>
</tr>
<tr>
<td>- Hanks's medium,pH 7.4, concentration: 0.2 %, Sterile</td>
<td>HAN-02 20 ml</td>
</tr>
<tr>
<td>- DME medium,pH 7.4, concentration: 0.2 %, Sterile</td>
<td>DME-02 20 ml</td>
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<tr>
<th>AtoCollagenpowder* CLP-01, 500mg.</th>
<th>Price</th>
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* Since the product will be manufactured upon order receipt please inquire about the date of delivery.
Atocollagen Sponges #CS, CLS

Background

The collagen sponge for cell culturing is a collagen-based device developed for three-dimensional cell culturing. The collagen porous sponge is prepared from an insoluble type I collagen that is derived from bovine Achilles tendon. Cells can penetrate into the sponge and proliferate three-dimensionally. This technique is very useful for tissue engineering studies.

See Characteristics of Atelocollagen here or detailed.

Application

♦ Three dimensional culture
♦ Research for tissue engineering as 3D scaffold

<References>

Honeycomb collagen #CSH

Background

The ‘Honeycomb’ collagen sponge has a structure in which uniform pores (200-400 μm) are arranged densely in one direction, into which cells can penetrate and proliferate. This structure facilitates the ready supply of nutrients to the cells inside the sponge, and releases metabolic wastes and biochemical products. Cells can proliferate and fill the lumen to form a uniform cell mass.

See Characteristics of Atelocollagen here or detailed.

Application

♦ Three dimensional culture
♦ Research for tissue engineering as 3D scaffold

<References>
Electron microscope image of Honeycomb sponge

Electron microscope image of mouse fibroblast cell culture in Honeycomb collagen sponge

References

Permeable Atocollagen Membranes #CLF & MEN & CM

**Background**

Permeable collagen membrane is specially developed from highly purified bovine dermal type I Atelocollagen for single and double layer tissue culture studies. It is particularly suitable for studying the molecular interactions between two different cell types by culturing on both sides of the membrane. It is potentially useful for the study of artificial organs and in the emerging field of tissue engineering.

See Characteristics of Atelocollagen here (or detailed)

The membrane is permeable and allows free passage of amino acids and small molecules, which is important for the absorption and exchange of molecules through the membrane using cell polarity. Hence; cells cultured on it can absorb nutrients, excrete metabolic wastes and release biochemical products across the membrane. The system therefore permits the long-term maintenance of cells similar to in vivo systems. The cells also have the advantage of utilizing its polarity for the exchange of molecules across the membrane. The system is particularly useful for cell differentiation and tissue engineering studies.

Since two different cell types can be cultured on both sides of the membrane, it is particularly useful for cell and molecular interaction studies. This collagen membrane is very suitable for basic studies and for the maintenance of artificial skin, artificial pancreas and other vital organs.

**Feature and Advantages**

- Due to membrane transparency, microscopic observation of the cells is possible while culturing.
- Study of cell interaction is possible without a co-culture.
- Cell culturing on a collagen membrane creates a natural environment that resembles in-vivo systems.
- Collagen membranes is available for use with both 6 and 24 well culture plates, and for 50mm culture dishes
- Amino acids and other small molecular weight compounds can move freely though the permeable collagen membrane.
- All products are manufactured under stringent quality control. Collagen membranes
- All product are sterilized.

**Application - CLJ**

- Study of interaction between cells
- Fundamental researches of the artificial internal organs
- Screening of efficacy of medicine
- Study of cell metabolism and metabolism mechanism
- Cell culture

Instruction manual for Atelocollagen, Permeable membrane for 50mm culture dish

**<References>**

Collagen microspheres #MIC

**Background**

Collagen microspheres are a cell culture substrate prepared from bovine dermal type I Atelocollagen. This product can be used for the culturing of fibroblasts, epithelial cells and has proven effective for the long-term maintenance of cell cultures. See [Characteristics of Atelocollagen here](#) (or detailed).

**Feature and Advantages**

Since collagen microspheres are prepared from fibril-forming type I Atelocollagen, they offer a cellular environment similar to living system.

**Application**

- Scaffold for cell culturing

<References>
Atocollagen Solutions #IPC, IAC, CLP

Background
Collagen solution for cell and tissue culturing is highly purified collagen solution manufactured with Koken advanced technology with excellent quality control. Cell and tissue cultures with Koken collagen solutions can express cellular functions like in vivo cells. Collagen not only plays the role of physical scaffold for the proliferating cells, but also enhances cell adhesion, proliferation and function. Collagen creates a natural extracellular environment that is important for cell communication and layer formation. The synthesizing capability of albumin, a function shared among hepatocytes, is maintained at a high level when cultured on plates coated with collagen solution. When skin fibroblasts are cultured three-dimensionally on collagen gel, the whole collagen contracts from the contractibility of the cells producing a dermis model that closely resembles the structure of live dermis. See Characteristics of Atelocollagen here (or detailed).

Feature and Advantages
Three dimensional culture
- All products are sterilized. The used collagen are extracted from bovine dermis, solubilized and purified by our original methods.
- Acidic solutions, I-PC and I-AC, form fibrils when being neutralized at 37°C

Application
- Collagen coating of culture plates
- Three dimensional culture in a collagen gel
- Culture on a gel
Atocell instruction manual for native Atocollagen

References