

## SphereCol®

PURIFIED COLLAGEN BEADS FOR CELL CULTURE,  
TISSUE ENGINEERING, AND CELL BIOLOGY

Catalog Number **5009**

### DESCRIPTION

Advanced BioMatrix's spherical collagen beads, SphereCol®, contain approximately 4 cc of beads, about 100 - 400 microns in size, in phosphate buffered saline (PBS). Collagen beads are formed using purified bovine collagen from a closed herd. Purification process includes validated viral clearance and prion inactivation steps. SphereCol® is ideal for cell attachment and growing cells in cell culture.

### ADVANTAGES

- 3-D bio-scaffold is superior to mono-layer and 2-dimensional scaffolds
- SphereCol® creates a natural environment for optimization of cell growth
- SphereCol® is composed of Type I bovine collagen which best supports the attachment, proliferation, and function of cells
- Promotes high cell viability, successful cell attachment (approximately 100%) and cell growth
- SphereCol® provides optimal surface area to volume ratios
- SphereCol® is sterile, highly-purified bovine collagen from a closed herd source.
- Purification process includes viral clearance and prion inactivation steps

### APPLICATIONS

Collagen microcarriers have a wide variety of uses. Following are a few of the many applications. *SphereCol® is not for human use as supplied.*

- Coatings and covalently bound modifications
- Bio-Medical Device Research
  - Nerve repair
  - 3-D porous structures
  - Hemostats
  - Drug delivery research

- Tissue Engineering
- Cell and Drug Delivery Research
  - Fibroblasts
  - Osteoblasts
  - Chondrocytes
  - Stem cells

### CHARACTERIZATION

**Composition:** Solid beads (microcarriers) composed of Type I bovine collagen in a 3-D bio-scaffold for maximization of cell growth.

**Size:** Approximately 100 - 400 microns.

**Shape:** Spherical.

**Purity:** SphereCol® beads are highly-purified collagen beads (>99% pure). In addition, Advanced BioMatrix's collagen has validated prion and viral inactivation steps built into the purification process.

**Concentration:** The concentration of beads in SphereCol® is approximately 4 cc of collagen beads in 15 ml PBS.

**pH:** SphereCol® beads are suspended in PBS, therefore, the pH is approximately 7.4.

### STABILITY

SphereCol® beads denature on exposure to heat from any source including irradiation. The beads should be refrigerated. Freezing is not recommended.

### COLLAGEN MICROCARRIER INSTRUCTIONS FOR USE

1. Preparation and Seeding:
  - a. Cell attachment to microcarriers is generally the most critical step in microcarrier culture. Temperature, pH, gas exchange and stir rate affect the rate of attachment. Some cells will attach while the culture is stirring while others may

need a static culture with intermittent stirring, such as 2 minutes of stirring for every 30 minutes, to achieve optimal attachment. If attachment becomes problematic, reduce the amount of media for attachment and then dilute it to the final volume once the cells have attached. For example, suspend your cells in approximately 30 ml media with the beads and then 24 hours later increase to a final volume to approximately 100 ml.

- b. Optimum seeding rate depends on the type of cell being cultured.
2. Culture Procedure and Monitoring:
  - a. Test the time it takes for the cells to attach to the microcarrier beads.
  - b. Check the morphology of the cells. Rounding and clumping will dictate the stirring rates.
  - c. Monitor the pH and adjust the media to cell ratios as necessary.
3. Changing the Media:
  - a. Continuous flow is the ideal media exchange regime.
  - b. For batch exchange, it is best to replace only a portion of the media at a time to minimize drastic changes. A general rule is about 50% of the media exchange every 2-3 days.
  - c. The culture media can be changed by allowing the beads to sediment under their own weight for about 5 minutes.
  - d. The frequency of changes may be more often due to the more efficient utilization of available nutrients in microcarrier cultures.
4. Harvesting of Cells:

Protease digestion is the standard method of releasing the cells from beads. The strength of the attachment of the cells to the collagen beads will vary from cell line to cell line. Collagenase may be the preferred method over trypsin for these beads. The cell culture may be first harvested by centrifugation to collect the cells. Washing the cells with EDTA-PBS may assist the protease digestion. After incubating the cells in a water bath using collagenase, the cells are harvested by centrifugation. The enzyme

concentration and digestion time will vary depending upon the activity of the enzyme.

## PACKAGING AND HANDLING

SphereCol® is supplied in individual bottles, shrink-band secured and packaged in a polyethylene bag.

**Storage:** SphereCol® should be stored at standard refrigeration temperatures (2-10°C/36-50°F). DO NOT FREEZE.

## REFERENCES

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