## Product Name

Name: Grace's Insect Cell Medium, with L-Glutamine

Cat. No.: C3150-0500

Size: 500 mL

## Product Description

Grace's Insect Cell Medium with L-Glutamine when properly supplemented can be utilized for the growth and maintenance of the culture of insect cells such as Dipteran and/or Lepidopteran cell lines. It has also been successfully used on a variety of other insect cell types as well as for the production of recombinant proteins via the Baculovirus Protein Expression System (BPES). Many types of insect culture media have been formulated to imitate or mimic the diverse biochemical properties characteristic of insect hemolymph for studying different biological processes. It should be obvious that variegated and diverse formulas have been developed or rather designed to endeavor to meet individual, unique niche requirements, but nevertheless, most often differ both quantitatively and qualitatively in terms of constituents.

The application of insect cell culture for heterologous protein expression has progressively increased over the last several decades. An important factor underscoring the popularity of insect cell expression systems is the innate ability of insect cells to produce relatively large quantities of post-translationally modified eukaryotic proteins in a relatively short period of time.

Grace's medium was originally developed almost half a century ago to support the growth of the Australian Emperor Gum Moth (*Opodiphthera eucalypti*) cells. It is a modification of Wyatt's medium which was formulated to resemble the biochemical profile of the hemolymph from *Bombyx mori* (the domesticated silkworm moth). Grace was the first to establish continuous cell lines using this medium. Prior to use, Grace's medium is typically supplemented in varying amounts of what and combinations based on individual requirements.

Grace's Insect Cell Medium with L-Glutamine is a medium designed to be optimized for the culture of *Lepidopteran spp.* insect cells with the addition of serum. The medium supports the growth and maintenance of both anchorage-dependent and suspension cultures of Sf9 cells derived from the pupal ovarian tissue of the fall armyworm, *Spodoptera frugiperda* (J.E.Smith). The Sf9 cell line is commonly used to isolate, propagate recombinant baculovirus stocks, and produce recombinant proteins. Grace's Insect Cell Medium with L-Glutamine is primarily used as a basal medium for the growth and maintenance of cell lines derived from the Order Lepidoptera, and supplementation with either fetal bovine serum (FBS), and/or a combination of lactalbumin hydrolysate, yeastolate or yeast extract, bovine serum albumin (BSA) or other protein sources, provide excellent results.

### Baculovirus Expression Vector System (BEVS)

The virus, isolated from the alfalfa looper, (*Autographa californica*-Speyer), is utilized for the Recombinant Expression Vector System (BEVS). Insect cells, infected with the virus, accumulate the highly expressed, major viral-encoded structural protein, polyhedrin. This protein forms the crystalline matrix of viral polyhedral bodies, also known as polyhedra, which are crucial for the viral infection of insects in the wild.

Although polyhedrin is an extremely important protein for viral propagation and survival in the wild, under laboratory conditions the formation of the polyhedrin matrix is no longer a pre-condition for the virus survival. The hypertranscribed promoters of the *polh* gene are specifically suited for the expression of the polyhedrin protein of the virus. In the BEVS, the *polh* gene can be replaced with a heterologous gene-of-choice for protein expression.

The Baculovirus Expression Vector System (BEVS) is based upon the fact that non-essential polyhedron protein is produced in large quantities. Substituting the *polyhedrin* gene with a gene-of-choice becomes conventional recombination technique to express a foreign protein. The production of foreign protein is then achieved by infection of insect cell cultures with the recombinant virus. *In vitro* replication and infection do not require the production of polyhedron protein as cell-to-cell infection occurs via the extracellular/budded virus particles which led to the development of BEVS. In cell culture, the production of BEVS was designed for heterologous gene expression that provides correct folding of:

- Disulfide Bond Formation
- Recombinant Protein
- Oligomerization
- Other Post-Translational Modifications (e.g., signal, proteolytic cleavage, N- & O-glycosylation)

As a result, a major advantage is the quick turnaround time for recombinant protein expression as the overexpressed protein exhibits the anticipated biological activity, immunogenicity, and antigenicity similar to the authentic natural proteins.

**Why use Grace's Insect Cell Medium**

The selection of a specific and complex nutrient-enriched medium, such as Grace's Insect Cell Medium with L-Glutamine, is based on its fulfillment of the insect cells to grow and maintain, is multi-faceted, and is based as well upon several major fundamental characteristics:

- Cell Type
- Type of Cell Culture Environment (e.g., Clonal, Monolayer or Suspension)
- Uniquely Defined Individual Niche Requirements

Grace's Insect Cell Medium with L-Glutamine also contains constituents that include a typical and wide variety of, among others:

- Amino Acids
- Glucose
- Sucrose
- Sodium Bicarbonate
- Inorganic Salts
- Vitamins
- Trace Elements

**Predominant Characteristics**

- Ready-To-Use-Formulation after Appropriate Supplementation
- With L-Glutamine
- Without Insect Hemolymph
- Without Lactalbumin Hydrolysate
- Without Yeastolate
- More Precise Evaluation of Cell Function
- Improves Cell Adaptation Time
- Promotes Cell Performance and Productivity
- More Uniform & Consistent Media Performance
- Sterile-Filtered (0.1 μm)

**Storage and Stability**

The product should be kept at **2 - 8°C.**
The product is **light-sensitive** and therefore should not be left in the light.
Shelf life: 12 months from date of manufacture

**Procedure**

1. Take a bottle from the storage at 2 - 8°C and read the label.
2. Ensure that the cap of the bottle is tight.
3. Allow to equilibrate to room temperature prior to use.
4. Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
5. Use the medium according to established protocols, using aseptic/sterile technique under a laminar-flow culture hood.

**Precaution and Disclaimer**

For research use only, not for clinical diagnosis, and treatment.