

Product Profile

Product Name:	Yeastolate Solution Concentrate(50X)
Product Catalog Number	01-357-1
Unit Size Availability:	100ml
Concentration:	50X
Formulation:	Dark-Colored Liquid Solution
Specified Storage Conditions:	(2-8°C)
Stability: (Under Ideal Handling Storage)	Please Refer To Product Label

Important Note! Please read the MSDS and Product Profile carefully in their entirety before using this material for possible safety precautions and potential hazards.

Product Description:

As peptones, both *Yeastolate Solution Concentrate(50X)* and Lactalbumin hydrolysate (LAH) are frequently utilized as nutritional supplements for preparing bacterial, insect and mammalian cell culture, especially as a rich source of amino acids. Together in synergy, they both serve as combinations of amino acids, water-soluble peptides, simple and complex carbohydrates (CHO's) as well as vitamins. Where Yeastolate is a yeast extract obtained after the autolysis of yeast cells of *Saccharomyces cerevisiae*, Lactalbumin (LA) is a milk-protein fraction removed from the whey when milk coagulates which is left after the removal of casein from milk and contains β -lactoglobulin and α -lactalbumin among other major and minor protein fractions. Whey protein is a mixture of globular proteins and is typically a mixture of β -lactoglobulin, α -lactalbumin, bovine serum albumin and immunoglobulins that are considered the major protein fractions. The Hydrolysates are one of the three major forms of whey protein; the other two being a concentrate and an isolate form. Hydrolysates are predigested and partially hydrolyzed (i.e. by enzymatic degradation) and are more easily absorbed. Whey is a source of branch chain amino acids (BCAA's) known for stimulating protein synthesis. Yeastolate is a complex mixture and unlike Lactalbumin Hydrolysate, identification of the constituents responsible for cell growth promotion has as yet not been achieved. Further fractionation, isolation and identification of individual active components are needed to better understand the role of these components on cell metabolism.

Yeastolate is one of the most complete nutritional supplements available and utilized in biotechnical industry. Yeastolate is not only effective in promoting the growth of insect cells but also in enhancing the production of recombinant protein. It is a key component involved in formulating serum-free media (SFM) for insect cell culture.

For years, Yeastolate has been utilized in insect cell nutrition and has proven not only to be a very versatile supplement but also unique in its ability to enhance the growth and production characteristics of certain cell lines (e.g. Sf9, High-Five Cells). The Sf-9 cell line is commonly used to isolate and propagate recombinant Baculoviral stocks and for the production of recombinant proteins. "Hi-5" are derived from *Trichoplusia ni* egg cell homogenates and have been shown to be capable of expressing significantly higher levels of secreted recombinant proteins when compared to other insect cells. High-Five Cells are adhesion-dependent cells and thus will not grow in suspension, but will grow on microcarrier beads in a spinner flask.

Grace's Insect Cell Medium with L-Glutamine when properly supplemented (e.g. Yeastolate, LAH) can be utilized for growth and maintenance of insect cells in culture such as in 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 the study of 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 this popularity of insect cell expression 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 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 and combinations based on individual niche requirements.

Grace's Insect Cell Medium with L-Glutamine is a medium designed and may be optimized for the culture of *Lepidopteran spp.* insect cells with the addition of serum. (Class, *Insecta*; Order, *Lepidoptera*; Family *Noctuidae*). The medium supports the growth and maintenance of both anchorage-dependent and suspension cultures of Sf-9 cells derived from the pupal ovarian tissue of the Fall Armyworm, *Spodoptera frugiperda* (J.E.Smith). *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 Lepidopteran species and that when supplemented 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.

Protein utilization generally involves three main important characteristics:

- ✦ The inherent amino acid content of the protein itself
- ✦ The degree to which its components may be absorbed and,
- ✦ The retention and utilization after absorption

Grace's Insect Medium supports the growth of insect cells including *Spodoptera frugiperda* and when supplemented with *Yeastolate Solution Concentrate (50X)*, Lactalbumin Hydrolysate (LAH) and other components, it can be used for the general growth and maintenance of insect cells. LAH may also be utilized, aside from other cell or tissue culture or microbiological applications/formulations, for the production of vaccines of viral origin. Other uses include not only the growth of *Lactobacilli* spp. where it is used specifically, as a nutritional source, but also for Clostridial spores and certain fermentation procedures. Due to its high tryptophan content, it is also useful for indole testing.

Predominant Characteristics of Yeastolate Solution Concentrate(50X) includes:

- § Liquid 50X Concentrate
- § Growth Supplement
- § Commonly Used In Cell, Insect and Mammalian Culture System Applications and Formulations
- § Optimized for Serum-Free or Serum-Reduced Culture Systems or Media Platforms
- § Relatively Long-Storage When Handled and Stored Properly Under Defined Conditions

Storage & Stability:

This product should be stored under specified conditions @ 2-8°C and used within the expiration date indicated on the product label. **Do not use** after the expiration date as specified on the label. Deterioration of liquid media may be recognized by any of the following characteristics, among others including: (a). color change, (b). granulation/ clumping, (c). insolubility, (d). And/or decrease in expected performance parameters. Any material described above should not be used and therefore discarded.

Yeastolate Solution Concentrate (50X) is relatively stable when handled and stored under specified conditions as stipulated on the label. Do not expose to light for prolonged periods as it is light-sensitive. For prolonged storage, store in the dark.

Instructions/Procedure:

- 1) Take a bottle of *Yeastolate Solution Concentrate(50X)* from specified storage conditions at 2-8°C and read the label.
- 2) Ensure that the cap of the bottle is tight.
- 3) Gently swirl the solution in the bottle to ensure homogeneity.
- 4) Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
- 5) Using aseptic/sterile technique under a laminar-flow culture hood and work according to established protocols.

Test	Specifications:
Sterility:	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
Grace's Insect Cell Medium	01-155-1	2-8°C
Lactalbumin Hydrolysate Solution, Conc., (50X),166.66g/ml	01-356-1	2-8°C
SDS Solution	01-890-1	Room Temperature(15-30°)
Dulbecco's Phosphate Buffered Saline(DPBS) without Calcium and Magnesium	02-023-1	Room Temperature(15-30°)
L-Glutamine Solution 29.2mg/ml in Saline	03-020-1	-20°C
L-Alanyl-L-Glutamine Solution(A Dipeptide Substitute)	03-022-1	-20°C
Penicillin-Streptomycin Solution,10,000 units/ml Penicillin G Sodium Salt,10mg/ml Streptomycin	03-031-1	-20°C
Sterile Culture-Grade Water	03-055-1	Room Temperature(15-30°)
Cell Dissociation Solution, Non-Enzymatic	03-071-1	2-8°C
Fetal Bovine Serum	04-001-1	-20°C
Fetal Bovine Serum(Qualified for Human Embryonic Stem Cells)	04-002-1	-20°C
Adult Bovine Serum	04-003-1	-20°C
Serum-Free Cell Freezing Medium	05-065-1	2-8°C
Colchicine Solution, 10µg/ml in DPBS	12-003-1	-20°C
Colcemid Solution, 10µg/ml in DPBS	12-004-1	-20°C
Potassium Chloride(KCl) Solution(0.075M)	12-005-1	2-8°C
Phytohemagglutinin-M(PHA-M), Lyophilized	12-006-1	2-8°C
Note: For a list of other Antibiotics, Serum, Reagents and Supplements, please refer to our Product Catalog, Product Profiles, Product Guides and Internet Site.		

References:

- 1) Sullivan Jr. John B. Krieger, Gary R. Hazardous Materials Toxicology: Clinical Principles of Environmental Health. Williams & Wilkins: Baltimore, Maryland, pps.157, 940-945.
- 2) Barile, Frank A. Clinical Toxicology: Principles and Mechanisms. CRC Press: Boca Raton, Florida, 2004.
- 3) Lackie, J. M. The Dictionary of Cell & Molecular Biology, Academic Press: London, 2007
- 4) O'Neil, Maryadele *et. al.*, The Merck Index, 14th Edition, Whitehouse Station, New Jersey,2006
- 5) Biological Industries (BI) Specifications
- 6) Current Edition USP/E Ph
- 7) Martindale The Extra Pharmacopeia, 28th Edition, Royal Pharmaceutical Society: London, England
- 8) Freshney, R.I. Animal Cell Culture: A Practical Approach, IRL Press, Oxford, p.25.