



Product Profile

Product Name:	Medium M-199(Hank's)Hank's Salts Base, With L- Glutamine
Product Catalog Number	01-085-1
Concentration:	1X
Unit Size Availability:	(A)500ml (B)100ml
Formulation:	Clear Red-Colored Solution
Optimal Storage Conditions:	2-8°C
Stability: (Under Specified Handling & Storage Conditions)	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:

Medium M-199(M199H), Hank's Salts Base, with L-Glutamine, was designed to promote continuous growth of primary chick embryo heart and fibroblast cells without serum supplementation. This medium is also useful with serum for growth of a wide array of species including non-transformed Human, Monkey and Chicken cells. M-199 is a modification of the original Medium M-199 where Earle's Salts are replaced with Hank's. Hank's has been part and parcel of cell culture since the early 1950's and has since been modified and enriched with a diverse complex of salt compounds, along with D-Glucose with or without Phenol Red that eventually segue into a final medium based upon application and technique to meet the final cell culture medium's unique niche requirements. Hank's Salts comprise a lower concentration of bicarbonate and different concentrations of salts of the essential inorganic ions (e.g.NaCl, CaCl₂,KH₂PO₄).

Cultured cells require a sterile environment and an optimal nutrient supply for growth and viability. Over the years variously defined basal media have been designed, developed, modified and enriched with a wide spectrum of constituents for supporting a vast range of cell types. Precise media formulations have been specifically developed by optimizing the concentrations of each and every component which performs a uniquely defined function.

At the minimum, Basal Cell Culture Media consist of Amino Acids (AA's), Energy Sources, Inorganic Salts, and Vitamins among other nutrients. It is basically an unsupplemented medium which promotes the growth of many types of cells which do not require any special nutrients. Development of a Basal Culture Medium is a prerequisite for the attachment, spreading and growth of cells *in vitro*. To maximize success, the *in vitro* culture conditions are designed to mimic such crucial *in vivo* conditions of nutrition, osmolality, pH and temperature. Optimal and critical nutrient components including such Inorganic Salts (e.g.NaCl, KCl, CaCl₂), Amino Acids (e.g. Arginine, Histidine, Lysine), energy sources (e.g. Glucose) and Vitamins (e.g. Nicotinimide, Thiamine, Riboflavin) are part and parcel that culminate in a perfect milieu for growth and viability. Whereas Amino Acids are incorporated into proteins and at a minimum these media must contain the essential Amino Acids, Vitamins are not only needed for cell growth and multiplication but also are important for cell survival and growth rate.

Unlike the balanced salt solutions that form the basis of many complex media formulations and are utilized to maintain cells for the short term in a viable condition, M-199 may be modified and further enriched to promote the growth and viability of cells in culture. M-199 may be utilized for a broad and variegated spectrum of cell lines when properly supplemented. For some applications, Serum supplementation is required to supply essential growth factors, hormones providing additional sources of Carbohydrates, Amino Acids and Vitamins.

These variegated components that constitute M-199 have been developed in order to fulfill the basic cell requirements for five basic and essential ions including: calcium, magnesium, phosphate, potassium and sodium and therefore contain various amounts of CaCl₂, KCl, MgSO₄, NaCl, NaHCO₃ and others comprising Hank's Salts. The key constituents of salts are the ions which function in osmolality whereas others such as Calcium and Magnesium are known, among other functions, to serve as cofactors for and support cell attachment and aggregation. Glucose and L-Glutamine serve as a major carbon and energy source and Phenol Red may serves as a pH indicator in specific cell culture media. M-199 also contains Sodium Bicarbonate which has an intimate relationship with and plays a major role with CO₂ by helping to maintain optimal physiological pH.

Some Predominant Characteristics of Medium M-199(Hank's) with L-Glutamine include:

- ◆ Liquid Formulation
- ◆ With Hank's Salts
- ◆ With Sodium Bicarbonate(NaHCO_3)
- ◆ With Phenol Red($\text{C}_{19}\text{H}_{13}\text{NaO}_5\text{S}$) as pH indicator
- ◆ Sterile-Filtered(0.1 μ)
- ◆ Cell Culture-Tested

Instructions:

The product should be stored at 2-8°C. The medium should be warmed to room temperature prior to use. The product should not be left in the light for prolonged periods as it is light-sensitive. When stored in the dark under ideal conditions, the product is stable until the expiry date.

Procedure:

- 1) Take a bottle from the proper 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.
- 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, work according to established protocols.

Quality Control

Test	Specification
Cell Culture Test	Test & Record
Cell Line	Vero
Endotoxins	Test and Record
Osmolality	291-321 mOsm/Kg
pH	7.0-7.5
Sterility	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
Basal Medium Eagle (BME), Earle's Salts Base, without L-Glutamine, without Sodium Bicarbonate 10X	01-015-5	2-8°C
Minimum Essential Medium Eagle (MEM-E), Earle's Salts Base, without L-Glutamine	01-025-1	2-8°C
Medium-M-199(Earle's), Earle's Salts Base, with L-Glutamine	01-080-1	2-8°C
Medium-M-199 10X Conc.,(Earle's), Earle's Salts Base, with L-Glutamine, without Sodium Bicarbonate	01-080-5	2-8°C
Earle's Balance Salt Solution 10X Conc., without Sodium Bicarbonate	02-010-5	Room Temperature (15-30°)
Earle's Balance Salt Solution without Phenol Red	02-011-1	Room Temperature (15-30°)
Earle's Balance Salt Solution without Phenol Red, without Sodium Bicarbonate	02-011-5	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°)
Serum-Free Cell Freezing Medium	05-065-1	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) Current Edition Merck Index
- 2) Biological Industries(BI) Specifications
- 3) Darling, D.C. and Morgan, S.J. Animal Cells: Culture and Media, New York: John Wiley & Sons,1994