

Product Information

Minimum Essential Medium Alpha Modification

with 2.0 mM L-glutamine, without deoxyribonucleosides, without ribonucleosides,
without sodium bicarbonate

CATALOG NO. 56459C

Description

Minimum Essential Medium (MEM) with Earle's Balanced Salts was developed by Harry Eagle as a result of his studies to determine the essential nutritional requirements of mouse L cells and HeLa cells in culture. He demonstrated that these cells require 13 amino acids and seven vitamins to grow and reproduce *in vitro*. MEM is a modification of Eagle's earlier medium Basal Medium Eagle (BME), containing higher concentrations of the essential nutrients. This medium has demonstrated the ability to support a variety of normal and transformed cells in culture and contains Earle's Balanced Salts, which makes it suitable for use in atmospheres charged with CO₂ gas.

The Alpha modification of MEM with Earle's Balanced Salts, commonly referred to as αMEM, contains non-essential amino acids, sodium pyruvate and additional vitamins. The modifications were first described by Stanners, et al in 1971 for use in growing hybrid mouse and hamster cells. This formulation is without the deoxyribonucleosides and ribonucleosides originally used in Stanners' studies.

Precautions

Use aseptic technique when handling or supplementing this medium after filtration. This product is for further manufacturing use. THIS PRODUCT IS NOT INTENDED FOR HUMAN OR THERAPEUTIC USE.

Storage

Store dry powder medium at 2 to 8 C. Do not use after the expiration date. Store hydrated medium protected from light at 2 to 8 C.

Indications of Deterioration

Dry powder medium should be free flowing. Do not use if powder is caked. Prepared medium should be clear of particulates and flocculent material. Do not use if liquid

medium is cloudy or contains precipitate. Other evidence of deterioration may include color change or degradation of physical or performance characteristics.

Formulation

Component (all components measured in mg/L)	
INORGANIC SALTS	
Calcium chloride anhydrous	200.000
Magnesium sulfate anhydrous	97.670
Potassium chloride	400.000
Sodium chloride	6800.000
Sodium phosphate monobasic monohydrate	140.000
Sodium pyruvate	110.000
VITAMINS	
Ascorbic acid	50.000
Biotin	0.100
D-calcium pantothenate	1.000
Choline chloride	1.000
Cyanocobalamin	1.360
Folic acid	1.000
i-inositol	2.000
Niacinamide	1.000
Pyridoxal HCl	1.000
Riboflavin	0.100
Thiamine HCl	1.000
AMINO ACIDS	
L-alanine	25.000
L-arginine HCl	126.980
L-asparagine monohydrate	50.000
L-aspartic acid	30.000
L-cysteine HCl monohydrate	100.000
L-cystine 2HCl	31.280
L-glutamic acid	75.000
L-glutamine	292.000
Glycine	50.000
L-histidine HCl monohydrate	41.880
L-isoleucine	52.500
L-leucine	52.400
L-lysine HCl	72.470
L-methionine	15.000
L-phenylalanine	32.000
L-proline	40.000
L-serine	25.000
L-threonine	48.000
L-tryptophan	10.000
L-tyrosine 2Na dihydrate	51.900
L-valine	46.000
OTHER	
Dextrose anhydrous	1000.000
DL-α-Lipoic acid	0.200
Phenol red sodium salt	10.620
ADD: Sodium bicarbonate	2200.000
Grams of powder per liter	10.085

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Preparation Instructions

1. Measure 80 - 90% of the final volume of cell culture grade water (Catalog No. 59900C) into an appropriate size mixing vessel. Water temperature should be 15 to 30 C. Do not heat water.
2. Add the dry powder medium to the water. Rinse the original package with a small amount of cell culture grade water to remove all traces of powder and add to the solution. Mix until completely dissolved.
3. For each liter being prepared, add 2.20 g/L of sodium bicarbonate (Catalog No. 90421C) or 29.3 mL/L of sodium bicarbonate solution 7.5% (Catalog No. 59221C). Mix until completely dissolved.
4. While stirring the solution in Step 3, adjust the pH to 6.9 - 7.1 using NaOH 1N (Catalog No. 59223C) or HCl 1N. The pH of bicarbonate buffered solutions usually rises 0.1 - 0.2 units during filtration.
5. Add cell culture grade water to the solution in Step 4 to bring it to the final volume. Keep the vessel closed until the solution is filtered to avoid fluctuations in pH.
6. Sterilize the solution using a membrane filter with a pore size of 0.22 µm or less. A peristaltic pump or an inert gas such as nitrogen can be used to provide positive pressure at 3 - 15 psi. Do not use CO₂ gas.
7. Sterile solutions should be dispensed aseptically into sterile containers. Store protected from light at 2 to 8 C.
8. Supplements, such as antibiotics, can be added to the sterilized solution using aseptic technique. Storage conditions and shelf life of the supplemented product may be affected by the nature of the supplements. Sterile serum should not be refiltered before or after being added to sterile medium because growth promoting capacity may be reduced upon refiltration.

NOTE: Dry powder medium is extremely hygroscopic and must be protected from atmospheric moisture. We recommend that the entire contents of each package be used immediately after opening.

Characteristics

Appearance

Off-white free-flowing powder

Bioburden

≤ 100 CFU/100 mL

Endotoxin

≤ 1.0 EU/mL

Osmolality (as supplied)

230 - 270 mOsm/kg H₂O

Osmolality (with NaHCO₃)

275 - 315 mOsm/kg H₂O

pH (as supplied)

3.3 - 3.7

pH (with NaHCO₃)

7.0 - 7.4

References

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5. Stanners, C. P., Eliceiri, G. L., Green, H., *Nature* (1971) 230:52.
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