

# Minimum Essential Medium Eagle (MEM) (Alpha modification)

**With Deoxyribonucleosides, Ribonucleosides and L-Glutamine**  
**Without Ascorbic acid and Sodium bicarbonate**

**Product Code: AT221**

## Product Description :

Minimum Essential Medium Eagle (MEM) is a modification of Basal Medium Eagle (BME). It was developed by Harry Eagle to meet the specific nutritional requirements of certain subtypes of Hela cells and normal mammalian fibroblasts. MEM includes higher concentration of amino acids so as to closely approximate the protein composition of cultured mammalian cells. MEM can be used either with Earle's salts or Hank's salts and can also be additionally supplemented with non-essential amino acids (NEAA). This medium can be further modified by eliminating calcium to facilitate growth of cells in suspension cultures.

AT221 is alpha modification of Minimum Essential Medium Eagle with L-glutamine, non-essential amino acids, deoxyribonucleosides and ribonucleosides. The medium does not contain ascorbic acid. Users are advised to review the literature for recommendations regarding medium supplementation and physiological growth requirements specific for different cell lines.

## Composition :

Ingredients	mg/L
<b>INORGANIC SALTS</b>	
Calcium chloride dihydrate	265.000
Magnesium sulphate anhydrous	97.720
Potassium chloride	400.000
Sodium chloride	6800.000
Sodium dihydrogen phosphate anhydrous	122.000
<b>AMINO ACIDS</b>	
Glycine	50.000
L-Alanine	25.000
L-Arginine hydrochloride	126.000
L-Asparagine monohydrate	50.000
L-Aspartic acid	30.000
L-Cysteine hydrochloride monohydrate	100.000
L-Cystine dihydrochloride	31.300
L-Glutamic acid	75.000
L-Glutamine	292.000
L-Histidine hydrochloride monohydrate	42.000
L-Isoleucine	52.000

L-Leucine	52.000
L-Lysine hydrochloride	72.500
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 disodium salt dihydrate	51.900
L-Valine	46.000
<b>VITAMINS</b>	
Choline chloride	1.000
D-Biotin	0.100
D-Ca-Pantothenate	1.000
Folic acid	1.000
Nicotinamide	1.000
Pyridoxal hydrochloride	1.000
Riboflavin	0.100
Thiamine hydrochloride	1.000
Vitamin B12	1.360
i-Inositol	2.000
<b>OTHERS</b>	
2' Deoxyadenosine	10.000
2' Deoxycytidine hydrochloride	11.000
2' Deoxyguanosine	10.000
Adenosine	10.000
Cytidine	10.000
D-Glucose	1000.000
Guanosine	10.000
Lipoic acid	0.200
Phenol red sodium salt	11.000
Sodium pyruvate	110.000
Thymidine	10.000
Uridine	10.000

## Directions :

1. Suspend 10.2gms in 900ml tissue culture grade water with constant, gentle stirring until the powder is completely dissolved. Do not heat the water.

2. Add 2.2gms of sodium bicarbonate powder (TC230) or 29.3ml of 7.5% sodium bicarbonate solution (TCL013) for 1 litre of medium and stir until dissolved.
3. Adjust the pH to 0.2 - 0.3 pH units below the desired pH using 1N HCl or 1N NaOH since the pH tends to rise during filtration.
4. Make up the final volume to 1000ml with tissue culture grade water.
5. Sterilize the medium immediately by filtering through a sterile membrane filter with a porosity of 0.22 micron or less, using positive pressure rather than vacuum to minimize the loss of carbon dioxide.
6. Aseptically add sterile supplements as required and dispense the desired amount of sterile medium into sterile containers.
7. Store liquid medium at 2-8°C and in dark till use.

### **Material required but not provided :**

Tissue culture grade water (TCL010)  
Sodium bicarbonate (TC230)  
Sodium bicarbonate solution, 7.5%(TCL013)  
1N Hydrochloric acid (TCL003)  
1N Sodium hydroxide (TCL002)  
Foetal bovine serum (RM1112/RM10432)

### **Quality Control:**

#### **Appearance**

White to light pink, homogenous powder

#### **Solubility**

Clear solution at 10.2 gms/L

#### **pH without Sodium Bicarbonate**

3.40 -4.00

#### **pH with Sodium Bicarbonate**

6.90 -7.50

#### **Osmolality without Sodium Bicarbonate**

240.00 -280.00

#### **Osmolality with Sodium Bicarbonate**

290.00 -330.00

#### **Cultural Response**

The growth promotion capacity of the medium is assessed qualitatively by analyzing the cells for the morphology and quantitatively by estimating the cell counts.

### **Endotoxin Content**

NMT 1EU/ml

### **Storage and Shelf Life:**

1. All the powdered media and prepared liquid culture media should be stored at 2-8°C. Use before the expiry date. In spite of above recommended storage condition, certain powdered medium may show some signs of deterioration /degradation in certain instances. This can be indicated by change in colour, change in appearance and presence of particulate matter and haziness after dissolution.
2. Preparation of concentrated medium is not recommended since free base amino acids and salt complexes having low solubility may precipitate in concentrated medium.
3. pH and sodium bicarbonate concentration of the prepared medium are critical factors affecting cell growth. This is also influenced by amount of medium and volume of culture vessel used (surface to volume ratio). For example, in large bottles, such as Roux bottles pH tends to rise perceptibly as significant volume of carbon dioxide is released. Therefore, optimal conditions of pH, sodium bicarbonate concentration, surface to volume ratio must be determined for each cell type. We recommend stringent monitoring of pH. If needed, pH can be adjusted by using sterile 1N HCl or 1N NaOH or by bubbling in carbon dioxide.
4. If required, supplements can be added to the medium prior to or after filter sterilization observing sterility precautions. Shelf life of the medium will depend on the nature of supplement added to the medium.

### **Disclaimer :**

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