Product Name

Name: RPMI 1640 Medium, without Phenol Red, without L-Glutamine

Cat. No.: C3016-0500

Size: 500 mL

Product Description

RPMI 1640 Medium, without Phenol Red, without L-Glutamine has been specifically developed for the long-term culture of blood cells, the culture of normal and abnormal human leukocytes (e.g., neoplastic WBC's) and is now used as a general medium (with serum) for hybridoma cultures. Roswell Park Memorial Institute (RPMI)-1640, when properly supplemented, has demonstrated wide applicability for supporting the growth of many types of cells in culture, including human lymphocytes.

Function of Phenol Red

Most commercial culture media include phenol red as a pH indicator. As cells undergo metabolic processes, especially involving glucose, acids (e.g., lactic, pyruvic) and CO_2 are produced with a resultant pH decrease. As a pH indicator, phenol red assists in rapidly identifying even superficial changes from neutral to acidic pH values as nutrients gradually depleted. Cultured cells require not only a sterile environment but also unique niche nutrient requirements for growth. In addition, the cell culture environment must maintain its stability for optimal growth and this is where temperature and pH come to the fore. Most cells require pH within 7.2 - 7.4, and controlling pH is a key and essential factor for creating the most optimum cell culture milieu. There are major variations to this optimum, as the ideal pH at culture initiation should be nearer to 7.4, but should not fall below 7.0 during the culture. A pH below 6.8 usually inhibits cell growth.

Phenol red solution changes from yellowish color to reddish color within a pH range of 6.8 - 8.4. Yellowish color indicates a pH of 6.4 or below, and reddish color indicates a pH of 8.2 and above. Cell culture media turns acidic as the nutrients become exhausted as the acidic end products from carbohydrate fermentation lower the pH causing the phenol red to turn from a reddish-purple hue (alkaline) to a yellowish hue (acid). The pH status of the medium can be continually monitored as indicated by the color.

Phenol red, under certain circumstances, may not only act as a weak estrogen with human breast cancer cells in culture but also may interfere with luminescence assays. Lipophilic impurities, not the phenol red dye per se accounts for the estrogenic activity. A change in color usually suggests that the culture medium must be changed or replenished appropriately. When phenol red is added as a component to cell culture media, it may be autoclaved with no adverse effects.

Most common types of media consist of an isotonic, buffered basal nutrient-enriched environment, which provides an energy source, inorganic salts, vitamins, amino acids as well as additional constituents (e.g., supplements) according to the demands of a particular cell line. A relatively more complex medium formulation provides the optimal cell culture environment which mimics those of *in vivo* environment including basic nutritional requirements, osmotic pressure, physiological pH, temperature, and among other considerations. At a minimum, it consists of the foundation medium components that are all part and parcel of a pre-tested complete media to assist the cells in meeting their metabolic demands.

RPMI 1640 Medium, without Phenol Red, without L-Glutamine contains no growth promoting factors or antimicrobials. The type of medium recommended usually is dependent upon the type and character of the cells in culture. Whether DMEM should be used is dependent upon the type and character of the cells in culture. Supplementation is also needed when specific additions or supplements (e.g., growth factors, serum, fatty-acids, buffers, and hormones) complement a typical basal or balanced salt solution medium or more complex media such as Iscove's Modification of DMEM.

Functions of L-Glutamine

The supplementation of L-glutamine, a precursor of glutamate, is one of the most readily available sources of energy for many rapidly dividing cell types for use in vitro and is a key component and essential amino acid that is present in many cell-culture media formulations and in virtually all mammalian cells in culture. Also, sodium pyruvate serves as an additional and easily accessible carbon and energy sources for cells in culture. Along with D-glucose, these balanced energy sources serve as the carbon skeletons for cell anabolic processes in addition to nucleic acid metabolism and protein production while limiting the potential accumulation of toxic ammonia.

Composition

Ingredients	mg/L	Ingredients	mg/L
INORGANIC SALTS			
Calcium nitrate tetrahydrate	100.000	Sodium chloride	6000.000
Magnesium sulphate anhydrous	48.840	Sodium phosphate dibasic anhydrous	800.000
Potassium chloride	400.000		
AMINO ACIDS			
Glycine	10.000	L-Lysine hydrochloride	40.000
L-Arginine hydrochloride	241.000	L-Methionine	15.000
L-Asparagine	50.000	L-Phenylalanine	15.000
L-Aspartic acid	20.000	L-Proline	20.000
L-Cystine dihydrochloride	65.200	L-Serine	30.000
L-Glutamic acid	20.000	L-Threonine	20.000
L-Histidine hydrochloride monohydrate	20.960	L-Tryptophan	5.000
L-Hydroxyproline	20.000	L-Tyrosine disodium salt	28.830
L-Isoleucine	50.000	L-Valine	20.000
L-Leucine	50.000		
Vitamins			
Choline chloride	3.000	Riboflavin	0.200
D-Biotin	0.200	Thiamine hydrochloride	1.000
D-Ca-Pantothenate	0.250	Vitamin B12	0.005

Folic acid	1.000	i-Inositol	35.000
Niacinamide	1.000	p-Amino benzoic acid (PABA)	1.000
Pyridoxine hydrochloride	1.000		
OTHERS			
D-Glucose	2000.000	Sodium bicarbonate	2000.000
Glutathione reduced	1.000		

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 refrigerator at 2 - 8°C and read the label. Warm up to room temperature (15-30°C) prior to use.
2. Ensure that the bottle cap is tight and swirl the bottle until reaching homogeneity.
3. Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
4. Pipette appropriate volume using aseptic/sterile technique under a laminar-flow culture hood.
5. Add antibiotics or other nutrients if desired.

Quality control

RPMI 1640 Medium, without Phenol Red, without L-Glutamine is tested for sterility, pH, osmolality, and endotoxin concentration. In addition, each batch is tested for cell growth performance.

Precaution and Disclaimer

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