

Product Name

Name: RPMI 1640 Medium, with 25 mM HEPES, with L-Glutamine

Cat. No.: C3018-0500

Size: 500 mL

Product Description

RPMI 1640 Medium, with 25 mM HEPES, with 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 (supplemented with serum) for hybridoma cultures. 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 HEPES

When considering biological pH, the HEPES molecule is zwitterionic, a buffer with the capability of carrying a positive charge at one end of the molecule and a negative charge at the other. It has been described as one of the best all-round, multi-purpose buffers available for biological research. It is a commonly used buffer ideal for most cell culture work as it helps to maintain pH levels, especially in basal culture media. This is mainly due to its ability to stabilize at the physiological pH despite the changes in CO₂ concentration which occurs normally in cell culture due to cellular respiration. When compared to bicarbonate buffers commonly used in cell culture, it is claimed that HEPES may not only be a more effective buffering agent for maintaining enzyme structure and function at lower temperatures but also is reportedly superior to NaHCO₃ in controlling pH in tissue or organ cultures. pH buffering is deemed necessary not only due to the fact that the growth of many cells is restricted to within a narrow pH range, but also because cellular metabolism frequently alters pH. However, the choice of buffers is dependent upon many factors including optimal milieu conditions, nutrient niche requirements, specific cell line, general circumstances and most of all, the researchers' experience. Buffer strength for cell culture applications is usually within the range of 10 - 25 mM. HEPES provides a buffer within the pH range of 6.15 - 8.35 showing its wide applicability and its most efficacious nature (i.e., pKa +/- 1, as a general rule).

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. This relatively more complex medium formulation provides an optimal cell culture environment which mimics those of the in vivo environment including basic nutritional requirements, osmotic pressure, physiological pH, temperature 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 with 25 mM HEPES, with 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. Supplementation is also needed when specific additions or supplements (e.g., growth factors, serum, fatty-acids, buffers, hormones) enhance the performance of a typical basal or balanced salt

solution medium or more complex media, such as RPMI 1640.

Function of L-Glutamine

The addition 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 required in many cell culture media formulations and in virtually all mammalian cells in culture. Sodium pyruvate serves as an additional and easily accessible carbohydrate energy source for cells in culture. Along with D-glucose, these balanced energy sources serve as carbon skeletons for cellular anabolic processes in addition to nucleic acid metabolism and protein production while limiting the potential accumulation of toxic ammonia gas.

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-Leucine	50.000
L-Arginine hydrochloride	241.000	L-Lysine hydrochloride	40.000
L-Asparagine	50.000	L-Methionine	15.000
L-Aspartic acid	20.000	L-Phenylalanine	15.000
L-Cystine dihydrochloride	65.200	L-Proline	20.000
L-Glutamic acid	20.000	L-Serine	30.000
L-Glutamine	300.000	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
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

PI-C3018 V1.0

D-Glucose	2000.000	Phenol red sodium salt	5.300
Glutathione reduced	1.000	HEPES	5958.000

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 to make sure the content is homogeneous.
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, with 25 mM HEPES, with 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.