



Product Information

RPMI-1640 MEDIUM

Without L-Glutamine, L-Leucine, L-Lysine,
L-Methionine and Sodium Bicarbonate

Product No. R 7130

Store at 2-8 °C

RPMI-1640 MEDIUM

PRODUCT DESCRIPTION

RPMI-1640 medium was developed by Moore et al., at Roswell Park Memorial Institute, hence the acronym RPMI. The formulation is based on the RPMI-1630 series of media utilizing a bicarbonate buffering system and alterations in the amounts of amino acids and vitamins. RPMI-1640 medium has been used for the culture of normal and neoplastic leukocytes. RPMI-1640 when properly supplemented, has demonstrated wide applicability for supporting growth of many types of cell cultures, including fresh human lymphocytes in the 72-hour phytohemagglutinin (PHA) stimulation assay.

RPMI-1640 MEDIUM, Product No. R 7130 is one of the cell culture media available from Sigma. The selection of a nutrient medium is strongly influenced by 1] type of cell, 2] type of culture [monolayer, suspension, clonal] and 3] degree of chemical definition necessary. It is important to review the literature for recommendations concerning medium, supplementation and physiological parameters required for a specific cell line.

COMPONENTS

COMPONENTS	g/L
Calcium Nitrate □ 4H ₂ O	0.1
Magnesium Sulfate (anhydrous)	0.04884
Potassium Chloride	0.4
Sodium Chloride	6.0
Sodium Phosphate Dibasic (anhydrous)	0.8
L-Arginine	0.2
L-Asparagine (anhydrous)	0.05
L-Aspartic Acid	0.02
L-Cystine □ 2HCl	0.0652
L-Glutamic Acid	0.02
Glycine	0.01
L-Histidine	0.015
Hydroxy-L-Proline	0.02
L-Isoleucine	0.05
L-Phenylalanine	0.015
L-Proline	0.02
L-Serine	0.03

L-Threonine	0.02
L-Tryptophan	0.005
L-Tyrosine □ 2Na □ 2H ₂ O	0.02883
L-Valine	0.02
D-Biotin	0.0002
Choline Chloride	0.003
Folic Acid	0.001
myo-Inositol	0.035
Niacinamide	0.001
p-Amino Benzoic Acid	0.001
D-Pantothenic Acid (hemicalcium)	0.00025
Pyridoxine • HCl	0.001
Riboflavin	0.0002
Thiamine • HCl	0.001
Vitamin B-12	0.000005
D-Glucose	2.0
Glutathione (reduced)	0.001
Phenol Red (sodium)	0.0053

RPMI-1640 normally contains the indicated concentrations of the following components:

L-Glutamine	0.3 g/L
L-Leucine	0.05 g/L
L-Lysine • HCl	0.04 g/L
L-Methionine	0.015 g/L

REAGENT For In Vitro Diagnostic Use

PREPARATION INSTRUCTIONS

Powdered media are extremely hygroscopic and should be protected from atmospheric moisture. The entire contents of each package should be used immediately after opening. Preparing a concentrated solution of medium is not recommended as precipitates may form.

Supplements can be added prior to filtration or introduced aseptically to sterile medium. The nature of the supplement may affect storage conditions and shelf life of the medium.

1. Measure out 90% of final required volume of water. Water temperature should be 15-20 °C.

2. While gently stirring the water, add the powdered medium. Stir until dissolved. Do NOT heat.
3. Rinse original package with a small amount of water to remove all traces of powder. Add to solution in step 2.

NOTE: It may be necessary to lower the pH to 4.0 with 1N HCl to completely dissolve this product. After it has dissolved completely, the pH can be raised to 7.2 with 1N NaOH prior to the addition of sodium bicarbonate.

4. To the solution in step 3, add 2.0 g sodium bicarbonate or 26.7 ml of sodium bicarbonate solution [7.5%w/v] for each liter of final volume of medium being prepared. Stir until dissolved.
5. While stirring, adjust the pH of the medium to 0.1-0.3 pH units below the desired pH since it may rise during filtration. The use of 1N HCl or 1N NaOH is recommended.
6. Add additional water to bring the solution to final volume.
7. Sterilize immediately by filtration using a membrane with a porosity of 0.22 microns.
8. Aseptically dispense medium into sterile container.

PRODUCT STORAGE

Store the dry powdered medium at 2-8°C under dry conditions and liquid medium at 2-8°C in the dark. Deterioration of the powdered medium may be recognized by any or all of the following: [1] color change, [2] granulation/clumping, [3] insolubility. Deterioration of the liquid medium may be recognized by any or all of the following: [1] pH change, [2] precipitate or particulate matter throughout the solution, [3] cloudy appearance [4] color change. The nature of supplements added may affect storage conditions and shelf life of the medium. Product label bears expiration date.

MATERIALS REQUIRED BUT NOT PROVIDED

Water for tissue culture use [W 3500]
 Sodium Bicarbonate [S 5761] or
 Sodium Bicarbonate Solution, 7.5% [S 8761]
 1N Hydrochloric Acid [H 9892]
 1N Sodium Hydroxide [S 2770]
 Medium additives as required

PRODUCT PROFILE

Appearance off-white powder

Moisture content $\leq 2.0\%$

Solubility clear solution at 1x

concentration

pH at room temperature 8.2 ± 0.3
 [without sodium bicarbonate]

pH at room temperature 8.2 ± 0.3
 [with sodium bicarbonate]

Osmolality 231 mOsm/kg H₂O $\pm 5\%$
 [without sodium bicarbonate]

Osmolality 274 mOsm/kg H₂O $\pm 5\%$
 [with sodium bicarbonate]

Amino Acid Analysis Analysis has confirmed
 by HPLC that amino acids are
 present at concentrations
 consistent with the formula.

Key Element Analysis Analysis has confirmed that
 by ICAP key elements are present at
 concentrations consistent
 with the formula.

BIOLOGICAL PERFORMANCE CHARACTERISTICS

Biological performance is assessed using an appropriate cell line(s). Growth studies are carried through 2 subculture generations. Cells are counted and growth is plotted as a logarithmic function of time in culture. Seeding efficiencies, doubling time, and final cell densities are determined. During the testing period cultures are examined microscopically for atypical morphology and evidence of cytotoxicity. Test results are available upon request.

REFERENCES

1. Moore, G.E., Gerner, R.E. and Franklin, H.A., (1967). Culture of Normal Human Leukocytes. JAMA. 199, 519-524.
2. Moore, G.E. and Woods L.K., (1976). Culture Media for Human Cells- RPMI 1603, RPMI 1634, RPMI 1640 and GEM 1717. Tissue Culture Association Manual. 3, 503-508.
3. Moore, G.E. Gerner, R.E. and Minowada, J., (1967). Studies of Normal and Neoplastic Cells. Studies of Normal and Neoplastic Human Hematopoietic Cells In Vitro. Twenty-first Annual Symposium on Fundamental Cancer Research. February, 41-63.
4. Moore, G.E. and Kitamura, H., (1968). Cell Line Derived from Patient with Myeloma. NY State Journal of Medicine. 68, 2054-2060.

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