Catalog Number: 1020122

Medium 199 with Earle's Salt (E199), powder, with L-glutamine, without sodium bicarbonate

Description: Medium 199, originally described by Morgan and his colleagues (1950), is a completely defined nutritional source for cell culture. Their investigations demonstrated that cell growth could be measured in this medium. It has broad species applicability including the culturing of non-transformed cell types. It may be used for vaccine production and the in vitro cultivation of rat lens tissues and primary mouse pancreatic epithelial explants. It is available in either Earle's or Hanks' salts.

References:

1. Morgan, J.F., et. al., *Proc. Soc. Exptl. Biol. Med.,* **v. 51,** 1 (1950).
2. Morgan, J.F., et. al., *J. Natl. Cancer Inst.,* **v. 16,** 557 (1955).
3. Parker, R.C., In: *Methods of Tissue Culture,* **3rd Ed.,** Harper & Row, New York (1961).

Note: The DL-amino acids of the original formulation have been replaced by L-amino acids at half the concentration.

Formulation:

Components	*mg/L*	*Mol. Wt.*	*Mol. (mM)*
Amino Acids			
L-Alanine	25.000	89.1	0.28
L-Arginine HCl	70.000	174.2	0.40
L-Aspartic Acid	30.000	133.1	0.23
L-Cysteine HCl H_2O	0.110	175.6	0.0006
L-Cystine 2HCl	26.000	313.2	0.08
L-Glutamic Acid	75.000	147.1	0.51
L-Glutamine	100.000	146.1	0.68
Glycine	50.000	75.07	0.67
L-Histidine HCl H_2O	21.880	209.6	0.10
L-Hydroxyproline	10.000	131.1	0.08
L-Isoleucine	20.000	131.2	0.15
L-Leucine	60.000	131.2	0.46

L-Lysine HCl	70.000	182.6	0.38
L-Methionine	15.000	149.2	0.10
L-Phenylalanine	25.000	165.2	0.15
L-Proline	40.000	115.1	0.35
L-Serine	25.000	105.1	0.24
L-Threonine	30.000	119.1	0.25
L-Tryptophan	10.000	204.2	0.05
L-Tyrosine 2Na $2H_2O$	57.870	261.2	0.22
L-Valine	25.000	117.1	0.21
Vitamins			
Biotin	0.010	244.3	0.00004
Calciferol	0.100	396.7	0.00025
Choline Chloride	0.500	139.6	0.00358
D-Calcium Pantothenate	0.010	238.3	0.00004
DL-a-Tocopherol PO_4 Na_2	0.010	554.7	0.00002
Folic Acid	0.010	441.4	0.00002
L-Ascorbic Acid	0.050	176.1	0.00028
Menadione Sodium Bisulfite $3H_2O$	0.019	330.2	0.00006
myo-Inositol	0.050	180.2	0.00028
Niacin	0.025	123.1	0.00020
Nicotinamide	0.025	122.13	0.00020
para-Aminobenzoic Acid	0.050	137.1	0.00036
Pyridoxine HCl	0.050	205.6	0.00024
Riboflavin	0.010	376.4	0.00003
Thiamine HCl	0.010	337.3	0.00003
Vitamin A Acetate	0.140	328.5	0.00043
Inorganic Salts			
Calcium Chloride [$CaCl_2$]	200.000	111	1.80
Ferric Nitrate [$Fe(NO_3)_3$ $9H_2O$] Nonahydrate	0.720	404	0.0018
Magnesium Sulfate [$MgSO_4$]	97.700	120.4	0.81

Potassium Chloride [KCl]	400.000	74.55	5.37
Sodium Chloride [NaCl]	6800.000	58.44	116.36
Sodium Phosphate Monobasic [NaH_2PO_4 H_2O] Monohydrate	140.000	159.96	0.88
Other			
2-Deoxy-D-Ribose	0.500	134.1	0.0037
5-Adenylic Acid H_2O	0.200	347.2	0.0006
Adenine Sulfate	10.000	386.4	0.0259
ATP 2Na $3H_2O$	1.000	605.2	0.0017
Cholesterol	0.200	386.7	0.0005
Dextrose	1000.000	180.2	5.5494
D-Ribose	0.500	150.1	0.0033
Glutathione (reduced)	0.050	307.33	0.0002
Guanine HCl	0.300	187.55	0.0016
Hypoxanthine Na	0.354	159.08	0.0022
Phenol Red Sodium Salt	10.000	376.4	0.0266
Sodium Acetate	50.000	82.03	0.6095
Thymine	0.300	126.1	0.0024
Tween 80	5.000	n/a	n/a
Uracil	0.300	112.1	0.0027
Xanthine Na	0.340	174.1	0.0020
Add			
$NaHCO_3$ Powder (g/L)	2.200		
$NaHCO_3$ 7.5% Solution (mL/L)	29.400		

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