

Formulations

WILLIAMS' MEDIUM E

Cat.# 112-033

COMPONENTS	mg / L
Inorganic Salts	
CaCl ₂ • 2H ₂ O	200.00
CuSO ₄ • 5H ₂ O	0.0001
Fe(NO ₃) ₃ • 9H ₂ O	0.0001
KCl	400.00
MgSO ₄ (anhydrous)	97.67
MnCl ₂ • 4H ₂ O	0.0001
NaCl	6800.00
NaHCO ₃	2200.00
NaH ₂ PO ₄	121.74
ZnSO ₄ • 7H ₂ O	0.0002
Other Components	
D-Glucose	2000.00
Glutathione (reduced)	0.050
Methyl linoleate	0.03
Phenol red • Na	10.20
Sodium pyruvate	25.00
Amino Acids	
L-Alanine	90.00
L-Arginine	50.00
L-Asparagine • H ₂ O	20.00
L-Aspartic acid	30.00
L-Cysteine	40.00
L-Cystine	20.00
L-Glutamic acid	50.00
L-Glutamine	292.00*
Glycine	50.00
L-Histidine	15.00
L-Isoleucine	50.00
L-Leucine	75.00
L-Lysine • HCl	87.50 ^(a)
L-Methionine	15.00
L-Phenylalanine	25.00
L-Proline	30.00
L-Serine	10.00
L-Threonine	40.00
L-Tryptophan	10.00
L-Tyrosine	35.00
L-Valine	50.00
Vitamins	
Ascorbic acid	2.00
d-Biotin	0.50

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D-Ca pantothenate	1.00
Choline chloride	1.50
Calciferol	0.10
Folic acid	1.00
i-Inositol	2.00
Menadione, sodium bisulfite•3H ₂ O	0.010
Nicotinamide	1.00
Pyridoxal•HCl	1.00
Riboflavin	0.10
Thiamine•HCl	1.00
DL-α-Tochopherol phosphate•2Na	0.010
Vitamin A acetate	0.10
Vitamin B ₁₂	0.20

*Omitted from preparation. Add L-Glutamine (Cat.# 118-084-060) to a final concentration of 2mM prior to use.

References: Williams, G.M. & Gunn, J.M., (1974) Exp. Cell Res., **89**:139-142

Remarks: (a) Original formula lists Lysine at 70.00 mg/L