Waris-H

Freshwater algae

Stocks	**per 100 ml**
(1) $Ca(NO_3)_2.4H_2O$	10.0 g
(2) $MgSO_4.7H_2O$	2.0 g
(3) $(NH_4)_2HPO_4$	2.0 g
(4) KNO_3	10.0 g
(5) Hepes	23.83 g

(6) Fe-EDTA:

Dissolve 1.04 g KOH pellets in 37 ml deionised water. Add 4.08 g $Na_2EDTA.2H_2O$.

Dissolve 2.74 g of $FeSO_4.7H_2O$ in 63 ml deionised water.

Combine solutions and stir until mixture is a deep burgundy colour. This may take over an hour.

KOH	1.04 g
$Na_2EDTA.2H2O$	4.08 g
$FeSO_4.7H_2O$	2.74 g

(7) Trace elements (PII):	**per litre**
Na_2EDTA	1.0 g
H_3BO_3	1.12 g
$MnSO_4.H_2O$	0.12 g
$ZnSO_4.7H_2O$	0.022 g
$CoSO_4.7H2O$	0.005 g

(8) Vitamin mix:	**per 100 ml**
Thiamine HCl	0.01 g
Biotin	0.0001 g
Cyanocobalamin	0.00002 g
Niacinamide	0.00001g

For ease of measuring, first prepare primary stock solution.

Primary Vitamin Stock	**per 100 ml**
Biotin	0.01 g
Cyanocobalamin	0.002 g
Niacin	0.001 g

Filter sterilise and store frozen in 1 ml aliquots.

For final vitamin stock, into 99 ml of deionised water, dissolve the thiamine HCl and add 1 ml of the primary stock.

(9) Soil Extract 2 (See SE2 Recipe)

Medium	**per litre**
Stock solutions 1 – 5	1.0 ml each
Stock solution 6 (Fe-EDTA)	0.1 ml
Stock solutions 7 – 8	1.0 ml each
Stock solution 9 (SE2)	10 ml

Make up to 1 litre with deionised water and adjust pH to **7.0** with 1M NaOH or 1M HCl. Autoclave at 15 psi for 15 minutes.

Waris-H Reduced + Soil Extract
This medium uses 0.5 ml per litre of stocks 1-5 and 50 ml per litre soil extract while omitting stocks 6, 7, and 8.

Reference
G.I. McFadden & M. Melkonian 1986, Phycologia 25: 551-557 – adapted for CCAP

Reviewed: 20th January 2025