

Technical Information

Murashige and Skoog Medium (Modification No.9) With ½ Macroelements, ½ Microelements and ½ Vitamins Without Sucrose and Agar

Product Code: PT1103

Application: Murashige and Skoog Medium (MS) was originally formulated by Murashige and Skoog in 1962 to optimize tobacco callus bioassay system for facilitating the study of cytokinins. Since then, it is widely used for micro propagation, organ culture, callus culture and suspension culture. The formulation is a nutrient blend of inorganic salts, vitamins and amino acid.

Murashige and Skoog Medium (MS) provides all essential macroelements and microelements. Potassium dihydrogen phosphate serves as a source of phosphate. Microelements like Boron, Manganese, Molybdenum, Copper, Iron and Zinc enhance metabolism in the plants. Boron plays a key role in the carbohydrate metabolism. Thiamine, pyridoxine, nicotinic acid acts as enzymatic cofactors in universal pathways including glycolysis and TCA cycle along with primary and secondary metabolism in the plants. Glycine serves as a source of amino acid.

The product is plant tissue culture tested but it is the sole responsibility of the user to ensure the suitability of the medium for individual species.

Composition**

Ingredients	mg/Litre
MACROELEMENTS	
Ammonium nitrate	825.000
Calcium chloride	166.100
Magnesium sulphate	90.344
Potassium nitrate	950.000
Potassium phosphate monobasic	85.000
MICROELEMENTS	
Boric acid	3.100
Copper sulphate pentahydrate	0.013
Cobalt chloride hexahydrate	0.013
EDTA disodium salt dehydrate	18.650
Ferrous sulphate heptahydrate	13.900
Manganese sulphate monohydrate	8.440
Molybdic acid (sodium salt)	0.120
Potassium Iodide	0.410
Zinc sulphate heptahydrate	4.300
VITAMINS	
myo-Inositol	50.000
Nicotinic acid (free acid)	0.250
Pyridoxine HCl	0.250
Thiamine hydrochloride	0.050
AMINO ACID	
Glycine	1.000
Total	2.22 gms/litre

Material required but not provided

- Autoclaved distilled water
- Sucrose (PCT1607)
- Plant growth regulators
- Gelling agents like Agar (PCT1901) or CleriGel (PCT1903)
- 1N NaOH/HCl

Quality Control

Appearance

White to off-white, homogenous, free flowing powder

Solubility

2.2 gms/litre soluble in distilled water

Colour and Clarity

Colourless to light yellow, clear solution

pH at 25°C

3.90 – 4.90

Plant Tissue Culture Test

The growth promoting properties of medium is assessed by providing plant cultures with relative humidity of about 60%±2%, temperature 22°C±2°C and photoperiod of about 16:8. The plant species showed actively growing callus and shoots with no structural, necrotic and toxic deformity.

Directions

- Reconstitute medium by adding required quantity of powder in two-third of total volume with constant, gentle stirring till the medium gets completely dissolved.
- Add heat stable supplements prior to autoclaving.
- Make up the final volume with distilled water.
- Adjust the pH of the medium to 5.75 ± 0.5 using 1N NaOH/HCl.
- Add gelling agent and heat the medium to boiling till complete dissolution of gelling agent.
- Sterilize the medium by autoclaving at 15 lbs and 121°C for 15 min.
- Cool the autoclaved medium to about 45°C before adding heat labile supplements.
- Aseptically dispense the desired amount of medium under a laminar airflow unit in sterile culture vessels

Storage and Shelf Life

- The plant tissue culture medium powder is extremely hygroscopic and must be stored at 2-8°C in air tight containers.
- Preferably, entire content of each package should be used immediately after opening.
- Use before the expiry date.

Disclaimer

- User must ensure suitability of the product(s) in their application prior to use.
- The product conforms solely to the technical information provided in this booklet and to the best of knowledge research and development work carried at CDH is true and accurate.
- **Central Drug House Pvt. Ltd.** reserves the right to make changes to specifications and information related to the products at any time.
- Products are not intended for human or animal diagnostic or therapeutic use but for laboratory, research or further manufacturing of diagnostic reagents extra.
- Statements contained herein should not be considered as a warranty of any kind, expressed or implied, and no liability is accepted for infringement of any patents.
- Do not use the products if it fails to meet specifications for identity and performance parameters.

Precautions

- Ensure appropriate pH of the medium before addition of gelling agent as acidic pH will lead to decreased gelation resulting in semi solid flowing gel while alkaline pH will lead to formation of hardened gel.
- Use of Distilled water/Tissue culture grade water is recommended for media preparation as tap water or lower grade water may lead to salt precipitation and improper gelation.
- Avoid preparation of concentrated solutions, as it will lead to precipitation of salts.