

Murashige and Skoog Modified Medium

With Calcium Chloride, Vitamins and MES
Without Sucrose and Agar

Product Code: PT045

Product Description :

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 phosphate source. Microelements like Boron, Manganese, Molybdenum, Copper and Zinc play vital role in the plant metabolism. Boron plays a key role in carbohydrate metabolism. Thiamine, pyridoxine, nicotinic acid act 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 while MES helps to maintain optimum pH of the media.

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/L |
|--------------------------------|----------|
| MACROELEMENTS | |
| Ammonium nitrate | 1650.000 |
| Calcium chloride | 332.200 |
| Magnesium sulphate | 180.690 |
| Potassium nitrate | 1900.000 |
| Potassium phosphate monobasic | 170.000 |
| MICROELEMENTS | |
| Boric acid | 6.200 |
| Cobalt chloride hexahydrate | 0.025 |
| Copper sulphate pentahydrate | 0.025 |
| EDTA disodium salt dihydrate | 37.300 |
| Ferrous sulphate heptahydrate | 27.800 |
| Manganese sulphate monohydrate | 16.900 |
| Molybdic acid (sodium salt) | 0.213 |

| | |
|----------------------------|------------|
| Potassium Iodide | 0.830 |
| Zinc sulphate heptahydrate | 8.600 |
| VITAMINS | |
| myo-Inositol | 100.000 |
| Nicotinic acid (free acid) | 0.500 |
| Pyridoxine HCl | 0.500 |
| Thiamine hydrochloride | 0.100 |
| AMINO ACID | |
| Glycine | 2.000 |
| OTHERS | |
| MES | 500.000 |
| Total(gms/litre) | 4.9 |

Material required but not provided :

- Autoclaved distilled water
- Gelling agents like Agar (PCT0901) or CleriGel™ (PCT0903)
- Plant growth regulators
- 1N NaOH/HCl
- Sucrose (PCT0607)

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.

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.

Quality Control:

Appearance

White to off-white, homogenous, free flowing powder

Solubility

4.9 gms/litre soluble in distilled water

Colour and Clarity

Colourless to light yellow, clear solution

pH at 25°C

3.50 - 4.50

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.

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.

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Disclaimer :

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