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Product Specification

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Technical Information

Banana Multiplication Medium

With Vitamins, Glucose, Sucrose, Plant growth regulators and Agar

Product Code: PT1150

Application: Banana Multiplication Medium has been developed for the *in vitro* multiplication of *Musa* species, family *Musaceae*. It is based on the Murashige and Skoog media composition with certain alterations aiding towards the suitability of species. The formulation is a nutrient blend of inorganic salts, vitamins, carbohydrates, amino acid, plant growth regulators and gelling agent.

Banana Multiplication Medium provides all the essential macroelements and microelements. Potassium nitrate and ammonium nitrate serve as sources of nitrate and helps in organogenesis. This mixture of cation and anion is responsible for maintaining pH of the media. Potassium dihydrogen phosphate serves as source of phosphate. Microelements like Boron, Manganese, Molybdenum, Iron, Copper, and Zinc enhance metabolism in the plants.Thiamine, nicotinic acid, nicotinic acid and inositol act as enzymatic cofactors in the universal pathways including glycolysis and TCA cycle along with the primary and secondary metabolism in plants. Sucrose and glucose provides energy and acts as osmoticum. Ascorbic acid serves as an antioxidant. 6-BAP aids in shoot proliferation and multiplication while IAA inducesrooting.

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	1650.000
Calcium chloride	332.200
Magnesium sulphate	180.690
Potasssium 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	
L-Ascorbic acid	20.000
Nicotinic acid (free acid)	0.500
Pyridoxine hydrochloride	0.500
Thiamine hydrochloride	0.100
myo-Inositol	100.000
AMINO ACID	
Glycine	2.000
CARBOHYDRATE	
Glucose	10000.000
Sucrose	20000.000
GELLING AGENT	
Agar	7000.000
OTHERS	
6-Benzylaminopurine	4.500
Indole-3-acetic acid	0.175
TOTAL	**41.5ms/litre**

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Material required but not provided

- Autoclaved distilled water
- 1N NaOH/HCl

Quality Control

Appearance
White to off-white, homogenous, free flowing powder
Solubility
41.5 gms/litre soluble after boiling in distilled water
Colour and Clarity
Colourless to light yellow solution, hazy gel is formed on cooling
pH at 25ºC
4.20-5.20
Gelling
Firm gel formed at pH: 5.75 ± 0.5
Plant Tissue Culture Test
The growth promoting properties of medium is assessed by providing plant cultures with relative humidity of about 60%±2%, temperature 22ºC±2ºC 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.
- 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.

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.

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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.
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