Dendrobium (Orchid) Seed Germination Medium (With Vitamin, Sucrose and Agar)

RDM-MSDS-01

Principle

Dendrobium (Orchid) seed germination medium has been developed for the in vitro germination of Dendrobium seeds. The formulation is composed of macronutrients, micronutrients, carbon sources, amino acid and vitamins. The macronutrients contain essential elements like nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg) and sulphur (S) for satisfactory growth and morphogenesis. The micronutrients include iron (Fe), manganese (Mn), zinc (Zn), boron (B), copper (Cu) and molybdenum (Mo) required for the growth of plant tissue and cells. The carbohydrates are used as carbon sources and energy source. Sucrose was reported to act as morphogenetic trigger in the formation of auxiliary buds and branching of adventitious root. Amino acids glycine is used for optimal growth, they are important for establishing cultures of cells and protoplasts. Amino acids provide plant cells with a source of nitrogen that is easily assimilated by tissues and cells faster than inorganic nitrogen sources. Vitamins are required for normal growth and development of plant cells; they are required by plants as catalysts in various metabolic processes. The commonly used vitamins are: thiamin (B1), nicotinic acid and pyridoxine (B6). Thiamin is necessarily required by all cells for growth. Nicotinic acid and pyridoxine, however not essential for cell growth of many species, they are often added to culture media. In some media myo-inositol is added in small quantities to stimulate cell growth of most plant species. Agar is solidifying agent,

Use: Recommendation for the in vitro propagation of Banana plants.

Contents*

Ingredients

Ingredients	mg/l	Ingredients	mg/l
MACROELEMENTS		**VITAMINS**	
Nitrate source#	825.000	Myo-inositol	50.000
Calcium chloride	166.100	Nicotinic acid	0.250
Magnesium sulphate	90.344	Pyridoxine HCl	0.250
Potassium nitrate	950.000	Thiamine HCl	0.050
Potassium phosphate monobasic	85.000	**AMINO ACID**	
MICROELEMENTS		Glycine	1.000
Boric acid	3.100	**CARBOHYDRATE**	
Cobalt chloride	0.013	Sucrose	20000.000
Copper sulphate	0.013	**GELLING AGENT**	
EDTA disodium salt	18.650	Agar	7000.000
Ferrous sulphate	13.900		
Manganese sulphate	8.450	**Total**	**29.20 g/l**
Molybdic acid	0.106		
Potassium iodide	0.415		
Zinc sulphate	4.300		

* Formula adjusted for optimum performance and parameters
# Equivalent to ammonium nitrate

Directions: Dissolve 29.20 gram in 750 ml distilled water mix well to dissolve all the ingredients. Add Heat

stable ingredients & make up the volume to 1000 ml. Adjust the pH 5.75 ±0.5 using 1N HCl/NaOH. Boil to dissolve the gelling agar completely. Sterilize by autoclaving at 15 lbs pressure (121 °C) for 15 min. Cool to 40°C for addition of heat labile ingredient. Aseptically dispense the medium in desired.

Precautions to be taken

These plant tissue culture media are intended for the in-vitro use only. All the handling, experiments, storage, and discarding should be performed with the help of skilled and knowledgeable technicians and as per the established guidelines. The material should be disposed only after proper sterilization by autoclaving. Please go through the MSDS of the media to avoid any accidents or in emergency.

Performance and Evaluation

The expected performance of the medium is liable to use as per the direction on the label when stored at optimum conditions and within expiry date.

Quality Control

Appearance	Off-white homogenous, free flowing powder.
Solubility	29.20 g/l soluble in distilled water
pH at 25 ˚C	5.75 ± 0.5
Gelling	Firm comparable with 0.7% agar gel
Color and clarity of ready medium	Hazy gel
Growth promoting properties	Assessed by providing plant cultures with relative humidity of about 60%±2%, temperature 22ºC±2ºC and photoperiod of about 16:8.
Cultural Response	Dendrobium (Orchid) seed shows germination with no structural, necrotic and toxic deformity.

Storage and Shelf Life: The product is highly hygroscopic; keep the container tightly closed at all times and store it properly as per the conditions mentioned on the label. The declared expiry is valid only when stored as per the conditions mentioned on the label.
Note: Sterilize media immediately after reconstitution.

Disposal: To avoid the contamination or propagation of any hazardous microbes the used, unusable or modified preparation of this product must be disposed after autoclaving after completion of task.

Reference

1. Kalyan Kumar De (2008), *An introduction to Plant Tissue Culture*,7th Ed., Darjeeling Govt. College, Darjeeling, India. New Central Book Agency(P) Ltd. Kolkota, India.
2. Narayanaswamy S (2005). *Plant cell and tissue Culture*, Tata Mc-Graw Hill publishing Co. Ltd. 6th reprint.
3. Roberta H.Smith .(2005), *Plant Tissue Culture-Techniques and Experiments*, 2nd Ed., Texas A&M University, College Station, Texas.Academic Press. An Imprint of Elsevier, San Diego California,U.S.A

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