Murashige and Skoog Modified Medium RDM-MS-03

(With Calcium Chloride and Gamborg B5 vitamins Without Sucrose and Agar)

Principle

Murashige and Skoog Modified Medium has been developed for micro propagation, organ culture, callus culture and suspension culture. 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. 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.

Use: Recommendation for micro propagation, organ culture, callus culture and suspension culture.

Contents*

Ingredients

Ingredients	mg/l	Ingredients	mg/l
MACROELEMENTS		**VITAMINS**	
Nitrate source#	1650.000	Myo-inositol	100.000
Calcium chloride	332.200	Nicotinic acid	1.000
Magnesium sulphate	180.690	Pyridoxine HCl	1.000
Potassium nitrate	1900.000	Thiamine HCl	10.000
Potassium phosphate monobasic	170.000		
MICROELEMENTS		**Total**	4.40 g/l
Boric acid	6.200		
Cobalt chloride	0.025		
Copper sulphate	0.025		
EDTA disodium salt	37.300		
Ferrous sulphate	27.800		
Manganese sulphate	16.900		
Molybdic acid	0.213		
Potassium iodide	0.830		
Zinc sulphate	8.600		

* Formula adjusted for optimum performance and parameters

Equivalent to ammonium nitrate

Directions: Dissolve 4.40 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 ±0.2 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	4.40 g/l soluble in distilled water
pH at 25 ˚C	5.75 ±0.2
Color and clarity of ready medium	Colorless clear solution
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	Plant species showed actively growing callus and shoots 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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