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Product Information

Murashige and Skoog Medium Modified

without agar, without sucrose

CATALOG NO. 56745C

Description

One of the most commonly used plant culture media, Murashige and Skoog Medium has proven effective in the culture of tissue derived from moncotyledons and dicotyledons. This medium, originally formulated to support tobacco callus, has been used to support callus initiation and growth, the growth of cells in suspension culture and the regeneration of shoots and plantlets from explants. More recently, it has been used for micropropagation of ornamental, vegetable and fruit plants in research and commercial enterprises.

Murashige and Skoog Medium Modified contains Murashige and Skoog salts, as well as a mixture of vitamins. This modification of the original formula does not contain agar or sucrose.

Precautions

Use aseptic technique when handling or supplementing this medium after filtration. This product is for research or for further manufacturing use. THIS PRODUCT IS NOT INTENDED FOR HUMAN OR THERAPEUTIC USE.

Storage

Store dry powder medium at 2 to 8 C. Do not use after the expiration date. Store hydrated medium at 2 to 8 C, protected from light.

Indications of Deterioration

Dry powder should be free flowing. Do not use if powder is caked. Rehydrated powder should be clear of particulates and flocculent material. Do not use if liquid medium is cloudy or contains precipitate. Other evidence of deterioration may include color change or degradation of physical or performance characteristics.

Formulation

Component (all components measured in mg/L)	
INORGANIC SALTS	
Ammonium nitrate	1650.000
Calcium chloride anhydrous	332.200
Cobalt chloride hexahydrate	0.025
Cupric sulfate pentahydrate	0.025
EDTA ferric sodium salt	36.700
Magnesium sulfate anhydrous	181.000
Manganous sulfate monohydrate	16.900
Potassium iodide	0.830
Potassium nitrate	1900.000
Potassium phosphate monobasic anhydrous	170.000
Sodium molybdate dihydrate	0.250
Zinc sulfate heptahydrate	8.600
VITAMINS	
i-inositol	100.000
Niacin	0.500
Pyridoxine HCl	0.500
Thiamine HCl	0.100
AMINO ACIDS	
Glycine	2.000
OTHER	
Boric acid	6.200
Grams of powder per liter	4.405

Preparation Instructions

1. Measure 80 - 90% of the final required volume of cell culture grade water (Catalog No. 59900C) into an appropriate size mixing vessel. Water temperature should be 15 to 30 C.
2. Slowly add 4.41 g/L dry powder medium to the water. Rinse the package with a small amount of cell culture grade water to remove all traces of powder and add to the solution. Mix until completely dissolved.
3. Heat stable supplements such as sucrose, agar and some vitamins can be added prior to autoclaving or added to the sterilized solution using aseptic technique. Storage conditions and shelf life of the supplemented product may be affected by the nature of the supplements.

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4. While mixing the solution, adjust the pH to 6.9 - 7.1 using NaOH 1N (Catalog No. 59223C) or HCl 1N. For most cells and culture conditions, the optimal pH of this salt solution after filtration is 7.0 - 7.4.
5. Add cell culture grade water to bring the medium to final volume.
6. Continue mixing for at least 30 minutes. To avoid fluctuation in pH, keep the vessel closed until the medium is autoclaved.
7. Dispense the prepared medium into autoclavable storage vessels and loosely attach the caps.
8. Sterilize the prepared medium in a validated autoclave at 121 C, 15 psi (1 kg/cm^2) for 30 minutes on the liquid cycle, slow exhaust. Because of the variability of autoclaves and load configurations, it may be necessary to adjust the time required to effectively sterilize the medium. The appropriate time should be determined in each laboratory.
9. Sterile medium should be protected from light at 2 to 8 C.

NOTE: Dry powder medium is extremely hygroscopic and must be protected from atmospheric moisture. We recommend that the entire contents of each package be used immediately after opening. Preparing concentrated solutions for long-term storage is not recommended because some salts tend to form insoluble complexes in solutions more concentrated than 1X. Supplements can be added prior to membrane filtration or added as sterile supplements to the sterilized solution.

Characteristics

Osmolality (as supplied)

70 - 100 mOsm/kg H_2O

pH (as supplied)

Refer to Certificate of Analysis

References

1. Murashige, T. and Skoog, *F.,Physiologica Plantarium* (1962) 55:473.
2. Huang, L. C. and Murashige, T., *TCA Manual* (1976) 3(1):539

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