



PRODUCT SPECIFICATION SHEET

Caulobacter Medium (DM1053)

Intended Use

Caulobacter Medium (DM1053) is recommended for cultivation of *Caulobacter* species.

Product Summary and Explanation

Caulobacter is a gram-negative, oligotrophic bacterium, widely distributed in fresh water lakes and streams where the most common limiting factor is phosphorus, an essential element for healthy growth. It resembles the aerobic, chemoheterotrophic *Pseudomonades*, with which they often share their natural habitats. *Caulobacter* is an important model organism for studying the regulation of the cell cycle, asymmetric cell division, and cellular differentiation as the daughter cells produced are morphologically and behaviorally different from each other. *Caulobacter* belongs to the group of dimorphic prosthecate bacteria (DPB) where reproduction takes place in an asymmetric manner rather than by binary fission. Lack of nutrients makes *Caulobacter* to dramatically elongate its stalk up to 30 times longer than those in phosphorus-rich medium.⁽¹⁾ They are tolerant to prolonged nutrient scarcity, which provides a dependable physiological basis for their enrichment.⁽²⁾

Caulobacter Medium is recommended for cultivation of *Caulobacter* species.⁽³⁾ This medium was developed by using the formula of Poindexter,⁽⁴⁾ by addition of solidifying agent, agar. By the Pasteur Institute this medium is supplied as Medium 28 for *Caulobacter*.⁽⁵⁾ Qi and Bernd⁽⁶⁾ used this medium to study polyhydroxybutyrate biosynthesis. The first reported isolation of *Caulobacter* by Loeffler made the discovery of employing dilute media.⁽⁷⁾

Principles of the Procedure

Caulobacter Medium contains peptone which provides carbonaceous, nitrogenous substances and other essential nutrients required for growth of organisms. Yeast extract provides B complex vitamins and other trace nutrients. Caulobacter Medium is low in nutrient concentration. Magnesium sulphate supplies essential ions for *Caulobacter* growth.

Formula / Liter

Ingredients	Gms / Liter
Peptone	2.00
Yeast extract	1.00
Magnesium sulphate. heptahydrate	0.20
Agar	10.00
Final pH : 7.0 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 13.10 grams (the equivalent weight of dehydrated powder per litre) of the medium in one litre distilled water.
2. Heat to boiling to dissolve the medium completely.
3. Sterilize by autoclaving at 15lbs pressure (121°C) for 15 minutes.
4. Mix well and pour into sterile Petri plates.

Quality Control Specifications

Dehydrated Appearance	Cream to yellow homogeneous free flowing powder
Prepared Medium	Light to medium amber coloured, clear to slightly opalescent gel forms in Petri plates
Reaction of 1.3% Solution	pH : 6.8 ± 0.2 at 25°C



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Gel Strength	Firm, comparable with 1.0% Agar gel
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Expected Cultural Response: Cultural characteristics observed after an incubation at 30-35°C for 4-7 days.

Sr. No.	Organisms	Results to be achieved	
		Inoculum (CFU)	Growth
1.	<i>Caulobacter crescentus</i> ATCC 15252	50-100	good-luxuriant
2.	<i>Caulobacter fusiformis</i> ATCC 15257	50-100	good-luxuriant

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

Refer to appropriate references for standard test procedures.

Results

Refer to appropriate references for interpretation of results.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

1. Growth of *Caulobacter* in rich media or in severely unbalanced media is extremely poor if it occurs and the cells are structurally fragile and morphologically aberrant.
2. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
3. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : *Caulobacter* Medium

Product Code : DM1053

Available Pack sizes : 500gm

References

1. Gonin M., Quardoleus E. M., ODonnol D., Maddock J., and Brun Y. V., 2000, J. Bacteriol., 182:337
2. Balows A., Truper H. G., Dworkin M., Harder W., Schleifer K. H., (Eds.), The Prokaryotes, 1992, 2nd Edition, Vol. III, Springer-Verlag.
3. Atlas R. M., 2004, Handbook of Microbiological Media, 3rd Edition, CRC Press.
4. Poindexter J. S., 1964, Bacteriol. Rev., 28:231
5. Collection Institute Pasteur Medium Description, Institute Pasteur.
6. Qi Qingsheng and Bernd H. A. Rehm, 2001, Microbiology, 147:3353
7. Loeffler F., 1980, Bakteriologie, Parasitenkd., 7:625-639.





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Further Information

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