# Caulobacter Medium

**M1661**

Caulobacter Medium is recommended for cultivation of *Caulobacter* species.

## Composition**

| Ingredients | Gms / Litre |
|---|---|
| Peptone | 2.000 |
| Yeast extract | 1.000 |
| Magnesium sulphate. heptahydrate | 0.200 |
| Agar | 10.000 |
| Final pH ( at 25°C) | 7.0±0.2 |

**Formula adjusted, standardized to suit performance parameters

## Directions

Suspend 13.10 grams (theequivalent weight of dehydrated powder per litre) in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15lbs pressure (121°C) for 15 minutes. Mix well and pour into sterile Petri plates.

## Principle And Interpretation

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

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

Caulobacter Medium is low in nutrient concentration. 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. This medium has peptone and yeast extract as ingredients, which act as source of nitrogen, amino acids and vitamins for the growth of organisms. Magnesium sulphate supplies essential ions for *Caulobacter growth* .

## Quality Control

**Appearance**
Cream to yellow homogeneous free flowing powder

**Gelling**
Firm, comparable with 1.0% Agar gel.

**Colour and Clarity of prepared medium**
Light to medium amber coloured, clear to slightly opalescent gel forms in Petri plates

**Reaction**
Reaction of 1.30 w/v aqueous solution at 25°C. pH : 7.0±0.2

**pH**
6.80-7.20

**Cultural Response**
M1661: Cultural characteristics observed after an incubation at 30-35°C for 4-7 days.

| Organism | Growth |
|---|---|
| **Cultural Response** | |
| *Caulobacter crescentus ATCC 15252* | good-luxuriant |
| *Caulobacter fusiformis ATCC 15257* | good-luxuriant |

## Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

## Reference

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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
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Revision : 1 / 2011

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