

## 22095 CASO Agar (Soybean Casein digest Broth, Casein-peptone Soymeal-peptone Broth)

CASO Agar is a general purpose culture medium for cultivation, isolation of fastidious or nonfastidious microorganisms or for maintenance of stock culture. Used for the precultivation and enumeration (*E. coli*) acc. to membrane-filter technique. It is suitable for the cultivation both of aerobes and anaerobes. As it does not contain the X and V factors, it is suitable for identification of *Haemophilus* sp. by adding X (Hemin) and V (DPN) factors strips. Recommended by the "Schweizerisches Lebensmittelbuch" 5<sup>th</sup> ed., chapter 56A.

### Composition:

| Ingredients                  | Grams/Litre |
|------------------------------|-------------|
| Casein peptone               | 15.0        |
| Soy peptone                  | 5.0         |
| Sodium chloride              | 5.0         |
| Agar                         | 15.0        |
| Final pH 7.3 +/- 0.1 at 37°C |             |

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

### Directions:

Suspend 40 g of dehydrated media in 1 litre of purified filtered water. Sterilize at 121°C for 15 minutes. Cool to 45-50°C. Mix gently and dispense into sterile Petri dishes or sterile culture tubes.

### Principle and Interpretation:

Casein peptone and Soya peptone provide nitrogen, vitamins and minerals. The natural sugars from Soya peptone promote bacterial growth. Sodium chloride is for the osmotic balance. The medium may also be used as a blood agar base. Add 7% of sterile blood to the sterile molten medium which has been cooled to approximately 45°C. CASO Agar can also be used for the preparation of chocolate agar. Because CASO Agar contains no added carbohydrate it may be used, with added blood, in the determination of haemolysis. When supplemented with 0.7g lecithin (Fluka 61755) and 5g Polysorbate (Tween 80 Fluka 93780) per litre of CASO Agar, the medium can be used as Microbial Content Test Agar for testing quaternary ammonium compounds. CASO Agar is recommended as a reference medium when testing selective media, to measure the degree of inhibition. A medium for isolation of *Bacteroides gracilis* is prepared from CASO Agar by adding formate (e.g. Sodium formate; Fluka 71540), fumarate (e.g. Sodium fumarate; Fluka 47970), and nitrate (e.g. Sodium nitrate; Fluka 71757). The medium is made selective using nalidixic acid (Fluka 70162) and teicoplanin.

Cultural characteristics after 18-48 hours at 35°C (if necessary 76 hours).

| Organisms (ATCC)                       | Growth |
|--|--------|
| <i>Escherichia coli</i> (25922)        | +++    |
| <i>Staphylococcus aureus</i> (25923)   | +++    |
| <i>Streptococcus pneumoniae</i> (6305) | +++    |
| <i>Streptococcus pyogenes</i> (19615)  | +++    |

### References:

1. E.H. Lennette, A. Ballows, W.J.Jr. Hausler, H.J. Shadomy, Manual of Clinical Microbiology. 4<sup>th</sup> ed. Washington D.C.: American Society for Microbiology (1985)
2. N.C.C.L.S., Quality Assurance for Commercially Prepared Microbiological Culture Media. Approved Standard. Vol.10, No.14 NCCLS Document M22-A (1990)
3. J.F Mac Faddin, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol. 1. Baltimore, MD.: Williams & Wilkins (1985)
4. L.S. Clesceri, A.E. Greenberg, R.R. Trussell, Standard Methods for the Examination of Water and Wastewater. 17th ed. American Public Health Association, Washington, D.C. (1989)

5. T.G. Mitchell, J. Appl. Bact. 27. 45 (1964)
6. E.M. Barnes D.H. Shrimpton, J. Appl. Bact. 2. 313 (1958)
7. Anon, J. Food Microbiol. 5. 291 (1987)
8. K. Lee , E.J. Baron, P. Summanen, S. Finegold (J. Clin. Microbiol. 28. 1747 (1990)
9. R.R. Beumer, M.C. te Giffel, L.J. Cox, Lett. Appl. Microbiol. 24. 421 (1997)

## 22098 CASO Broth (Soybean Casein digest Broth, Casein-peptone Soymeal-peptone Broth)

The medium will support a luxuriant growth of many fastidious organisms without the addition of serum. Used for confirmation of *Campylobacter jejuni* by means of the motility test. Recommended by the "Schweizerisches Lebensmittelbuch" 5<sup>th</sup> ed., chapter 56A, USP XXIII (1995), EP (1999) and the Ph Eur. (1999).

### Composition:

| Ingredients                    | Grams/Litre |
|--------------------------------|-------------|
| Casein peptone                 | 17.0        |
| Soy peptone                    | 3.0         |
| Sodium chloride                | 5.0         |
| Dipotassium hydrogen phosphate | 2.5         |
| Glucose                        | 2.5         |
| Final pH 7.3 +/- 0.2 at 37°C   |             |

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

### Directions:

Suspend 30 g of dehydrated media in 1 litre of purified filtered water. Sterilize at 121°C for 15 minutes.

### Principle and Interpretation:

Casein peptone and Soya peptone provide nitrogen, vitamins and minerals. The natural sugars from Soya peptone and Glucose promote organism growth. Sodium chloride is for the osmotic balance, while dipotassium hydrogen phosphate is a buffering agent.

CASO Broth is often for the tube dilution method of antibiotic susceptibility testing. The addition of a small amount of agar ( approx. 0.05-0.2% Fluka 05040, add before sterilisation) renders the broth suitable for the cultivation of obligatory anaerobes, such as *Clostridium* species. The superior growth-promoting properties of CASO Broth make it especially useful for the isolation of organisms from blood or other body fluids. Anticoagulants such as sodium polyanetholesulfonate (Fluka 81305) or sodium citrate (Fluka 71635) may be added to the broth prior to sterilisation. 5 to 10 ml of blood may be added to 50 ml of medium.

Cultural characteristics after 18-48 hours at 35°C (if necessary 76 hours).

| Organisms (ATCC)                        | Growth | max. incubation time in days |
|---|--------|------------------------------|
| <i>Escherichia coli</i> (8739)          | +++    | 3                            |
| <i>Staphylococcus aureus</i> (6538-P)   | +++    | 3                            |
| <i>Streptococcus pneumoniae</i> (6301)  | +++    | 3                            |
| <i>Bacillus subtilis</i> (6633)         | +++    | 3                            |
| <i>Pseudomonas aeruginosa</i> (9027)    | +++    | 3                            |
| <i>Candida albicans</i> (2091 or 10231) | +++    | 5                            |
| <i>Aspergillus niger</i> (6301)         | +++    | 5                            |

#### References:

1. J.L. Smith, B.J. Dell, Capability of selective media to detect heat –injured *Shigella flexneri*, J. Food Protect. 53, 141 (1990)
2. R.G. Garison, Studies of the respiratory activity of *Histoplasma Capsulatum*, J. of infect.. Dis. 108: 120-124 (1961)
3. N.B. Mc Culloug, Laboratory tests in the diagnosis of brucellosis. Amer. J. of public health 39: 866-869 (1949)
4. Jean. F. Mac Faddin, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol. 1. Baltimore, MD.: Williams & Wilkins. (1985)

## 22099 CASO MUG Agar (Tryptone Soya MUG Agar, Tryptic Soy MUG Agar, Soybean Casein digest MUG Agar)

This universal medium without indicator or inhibitor is intended for a broad range of applications including enumeration, isolation and cultivation of a wide variety of microorganisms, in particular *E. coli*. It is also suitable for the cultivation of more fastidious microorganisms. A positive indole reaction and fluorescence under UV lamp provide confirmation for *E. coli*. It is suitable for the cultivation of both aerobes and anaerobes. As it does not contain the X and V factors, it is suitable for identification of *Haemophilus* sp. by adding X (Hemin) and V (DPN) factors strips. Recommended by the "Schweizerisches Lebensmittelbuch" 5<sup>th</sup> ed., chapter 56A.

#### Composition:

| Ingredients                                | Grams/Litre |
|--|-------------|
| Casein peptone                             | 16.0        |
| Soy peptone                                | 5.0         |
| Sodium chloride                            | 6.0         |
| Tryptophan                                 | 1.0         |
| Methylumbelliferyl- $\beta$ -D-glucuronide | 0.07        |
| Agar                                       | 13.0        |

Final pH 7.3 +/- 0.2 at 37°C

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

#### Directions:

Dissolve 41.1 g in 1 litre distilled water and autoclave at 121°C for 15 minutes. Cool to 45-50°C. Mix gently and dispense into sterile Petri dishes or sterile culture tubes. Check the plates under UV light at about 360-370 nm. Slightly blue fluorescence indicates the presence of *E. coli*. For confirmation the indole test can be made with Kovac's reagent (Fluka 60983). Cover a colony with 10-20  $\mu$ l Kovac's reagent. A change of color to red after 2-10 seconds indicates indole formation.

#### Principle and Interpretation:

Casein peptone and Soya peptone provide nitrogen, vitamins and minerals. The natural sugars from Soya peptone promote bacterial growth. Sodium chloride ensures osmotic balance. The addition of tryptophan improves the indole reaction.

The medium may also be used as a blood agar base. Add 7% of sterile blood to the sterile molten medium which has been cooled to approximately 45°C. CASO MUG Agar can also be used for the preparation of chocolate agar. Because CASO MUG Agar contains no additional carbohydrates it may be used, by adding blood, for the determination of haemolysis. When supplemented with 0.7g lecithin (Fluka 61755) and 5g Polysorbate (Tween 80 Fluka 93780) per litre of CASO MUG Agar, the medium can be used as Microbial Content Test Agar for testing quaternary ammonium compounds.

CASO MUG Agar is recommended as a reference medium when testing selective media, to measure the degree of inhibition. A medium for isolation of *Bacteroides gracilis* is prepared from CASO MUG Agar by adding formate (e.g. Sodium formate; Fluka 71540), fumarate (e.g. Sodium fumarate; Fluka 47970), and nitrate (e.g. Sodium nitrate; Fluka 71757). The medium is made selective using nalidixic acid (Fluka 70162) and teicoplanin.

$\beta$ -D-glucuronidase, which is produced by *E. coli*, cleaves 4-Methylumbelliferyl- $\beta$ -D-glucuronide to 4-methylumbelliferone and glucuronide. The fluorogen 4-methylumbelliferone can be detected under a long wavelength UV lamp. In addition the indole test can be made with Kovac's reagent (Fluka 60983).

Cultural characteristics after 18-48 hours at 35°C (if necessary 76 hours).

| Organisms (ATCC)                       | Growth | Fluorescence | Indole reaction |
|--|--------|--------------|-----------------|
| <i>Escherichia coli</i> (25922)        | +++    | +            | +               |
| <i>Staphylococcus aureus</i> (25923)   | +++    | -            | -               |
| <i>Streptococcus pneumoniae</i> (6305) | +++    | -            | -               |
| <i>Streptococcus pyrogenes</i> (19615) | +++    | -            | -               |

#### References:

1. Lennette, E.H., Ballows, A., Hausler, W.J.Jr., and Shadomy, H.J. Manual of Clinical Microbiology. 4th ed. 1985 Washington D.C.: American Society for Microbiology.
2. N.C.C.L.S. 1990 Quality Assurance for Commercially Prepared Microbiological Culture Media. Approved Standard. Vol.10, No.14 NCCLS Document M22-A.
3. Mac Faddin, Jean. F., 1985 Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol. 1. Baltimore, MD.: Williams & Wilkins.
4. Clesceri, L.S., A.E. Greenberg, and R.R. Trussell. 1989 Standard Methods for the Examination of Water and Wastewater. 17th ed. American Public Health Association, Washington, D.C.
5. Mitchell T. G. (1964) J. Appl. Bact. 27. 45-52.
6. Barnes Ella M. and Shrimpton D. H. (1958) J. Appl. Bact. 2. 313-329.
7. Anon. (1987) J. Food Microbiol. 5. 291-296.
8. Lee K., Baron E.J., Summanen P. and Finegold S. (1990) J. Clin. Microbiol. 28. 1747-1750.
9. Beumer R.R., te Giffel M.C. and Cox L.J. (1997) Lett. Appl. Microbiol. 24. 421-425.