Technical Information

Preston Broth Base

Product Code: DM3187I

Application: - Recommended for the detection of thermotolerant *Campylobacter* species from water samples. The composition and performance criteria of this medium are as per the specifications laid down in ISO 17995:2019(E) and ISO 10272-1:2017/Amd.1:2023(E).

Composition**

Ingredients	Gms / Litre
ISO 17995:2019(E) and ISO 10272-1:2017/Amd.1:2023(E)	
Specification - Preston Broth	
Special meat extract	10.000
Peptone	10.000
Sodium chloride	5.000
Final pH (at 25°C)	7.4±0.2
Supplements to be added after autoclaving	
Sodium metabisulphite	0.250
Sodium pyruvate	0.250
Iron (II) sulphate hydrate	0.250
Polymyxin B sulphate	5000IU
Rifampicin	0.010
Trimethoprim lactate salt	0.010
Amphotericin B	0.010
Preston Broth Base – DM3187I	
HM extract #	10.000
Peptone	10.000
Sodium chloride	5.000
Final pH (at 25°C)	7.4±0.2
Minerals Growth Supplement – MS2009	
Sodium metabisulphite	0.250
Sodium pyruvate	0.250
Ferrous sulphate	0.250
PRTC Selective Supplement – MS2042 (2Vials)	
Polymyxin B sulphate	2500IU
Rifampicin	0.005
Trimethoprim	0.005
Cycloheximide	0.005

**Formula adjusted, standardized to suit performance parameters
Equivalent to Special meat extract

Principle & Interpretation

Campylobacter species cause mild to severe diarrhoea, with loose, watery stools often followed by bloody diarrhoea . *C. jejuni, C.coli* and *C. lari* are responsible for the major infections. Foods of animal origin are the primary vehicles of *Campylobacter* infections in humans. Unpasteurized milk has been by far the most commonly implicated vehicle in the foodborne outbreaks of *Campylobacter jejuni* enteritis (1,2). *Campylobacter's* were originally classified within the genus *Vibrio*, but they differ from *Vibrio*'s in their DNA Base composition and their ability to grow under conditions of reduced oxygen tension. Selective media were originally designed to isolate *C. jejuni* from faeces, by use of a cocktail of antibiotics in a rich basal medium (3). Preston Broth Base is formulated as per recommendations of ISO for detection of *Campylobacter* spp. from water samples (4,5,6). The media is made selective for *Campylobacters* by addition of the antibiotics Rifampicin, Polymyxin B sulphate, trimethoprim and amphotericin B. These antibiotics are added as freeze dried supplements .
The medium contains Peptone, HM extract which aid resuscitation of sub lethally damaged cells of *Campylobacter.*

Type of specimen

Water samples

Specimen Collection and Handling

Processesing : (4)

Test portion and initial suspension

Selective Enrichment A : A single sample volume is processed and wherever necessary, at least three 10 fold volumes are used. 10ml of the test portion with 90ml of the enrichment medium Preston Broth. Incubate the initial suspension in a micro-aerobic atmosphere at 37± 1°C for r 44 hours ± 4 hours.

Plating out : Using the culture obtained in the enrichment medium, inoculate with a sterile 10 µl loop on the surface of mCCD Agar (DM1887I). Incubate the plates at 41.5± 1°C in a micro-aerobic atmosphere for 44 hours ± 4 hours.

Confirmation : Biochemical and serological tests are performed for confirmation.

Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Individual organisms differ in their growth requirement and may show variable growth patterns on the medium.
2. Each lot of the medium has been tested for the organisms specified on the COA. It is recommended to users to validate
3. Biochemical and serological tests are performed for confirmation.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Methodology

Suspend 12.50 gram in 500 ml purified/distilled water. Heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121±1°C) for 15±3 minutes. Cool to 45-50°C and aseptically add rehydrated contents of 1 vial of Minerals Growth Supplement (MS2009), PRTC Selective supplement (MS2042) and 25 ml of sterile lysed defibrinated sheep or horse blood in the medium. Horse blood may be lysed by freezing then thawing out. Mix well and aseptically dispense into sterile tubes or flasks as desired.

Quality Control

Appearance

Light yellow to brownish yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Basal medium : Yellow to brownish yellow coloured clear solution with slight precipitate. after addition of lysed horse blood: Red to brown coloured opaque solution in tubes.

Reaction

Reaction of 2.5% w/v aqueous solution at 25°C. pH : 7.4±0.2

pH

7.20-7.60

Cultural Response

Productivity : Cultural characteristics observed with added Minerals Growth Supplement (MS2009), PRTC Selective Supplement (MS2042) and sterile lysed defibrinated blood after an incubation at 37 ± 1°C for 5± 1 hours and then at 41.5 ± 1° C for 44 hours ± 4 hours in a microaerobic atmosphere. Further subculture is carried out on DM1887I at 41.5°C in a microaerobic atmosphere for 44 hours ± 4 hours.

Selectivity : Cultural characteristics observed with added Minerals Growth Supplement (MS2009), PRTC Selective Supplement (MS2042) and sterile lysed defibrinated blood after an incubation at 37 ± 1°C for 5± 1 hours and then at 41.5 ± 1°C for 44 hours ± 4 hours in a microaerobic atmosphere. Further subculture is carried out on DM1887I at 41.5°C in a microaerobic atmosphere for 44 hours ± 4 hours.

Organism	Inoculum (CFU)	Recovery on DM1887I -mCCD Agar	Growth on DM1887I - mCCD Agar
Productivity			
Campylobacter jejuni ATCC 33291 (00005*) + *Escherichia coli* ATCC 25922 (00013*) + *Proteus mirabilis* ATCC 29906 (00023*)	50-100 $>=10^4$ $>=10^4$	>10 colonies	greyish small, flat colonies, may have metallic sheen
Campylobacter jejuni ATCC 29428 (00156*) + *Escherichia coli* ATCC 8739 (00012*) + *Proteus mirabilis* ATCC 29906 (00023*)	50-100 $>=10^4$ $>=10^4$	>10 colonies	greyish small, flat colonies, may have metallic sheen
Campylobacter coli ATCC 43478 (00004*) + *Escherichia coli* ATCC 25922 (00013*) + *Proteus mirabilis* ATCC 29906 (00023*)	50-100 $>=10^4$ $>=10^4$	>10 colonies	greyish small, flat colonies, may have metallic sheen
Campylobacter coli ATCC 43478 (00004*) + *Escherichia coli* ATCC 8739 (00012*) + *Proteus mirabilis* ATCC 29906 (00023*)	50-100 $>=10^4$ $>=10^4$	>10 colonies	greyish small, flat colonies, may have metallic sheen
Selectivity			
Escherichia coli ATCC 25922 (00013*)	$>=10^4$	inhibited	
Escherichia coli ATCC 8739 (00012*)	$>=10^4$	inhibited	
Proteus mirabilis ATCC 29906 (00023*)	$>=10^4$	inhibited	

Key : (*) - Corresponding WDCM numbers

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation.
Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product.
Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (7,8).

Further Reading

1. Blasser M.J., Cravens J., Powers B.W., LaForce F.M., and Wang W. L.L., 1979, Am. J. Med., 67:715.
2. Brieseman M.A., 1984, N.Z. Med. J., 97:411.
3. Corry, Curtis and Baird. Culture Media For Food Microbiology, Vol.34. Progress in Industrial Microbiology, 1995, Elsevier, Amsterdam.
4. International Organization for Standardization (ISO), 17995:2019(E), Water quality - Detection and enumeration of thermotolerant *Campylobacter* spp.
5. International Organization for Standardization (ISO), 10272-1:2017/Amd.1:2023(E), Microbiology of the food chain — Horizontal method for detection and enumeration of *Campylobacter* spp.
6. Lipps WC, Braun-Howland EB, Baxter TE,eds. Standard methods for the Examination of Water and Wastewater, 24th ed.Washington DC:APHA Press; 2023.
7. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
8. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W.

(2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
- The product conform solely to the technical information provided in this booklet and to the best of knowledge research and development work carried at **CDH** is true and accurate
- **Central Drug House Pvt. Ltd.** reserves the right to make changes to specifications and information related to the products at any time.
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- Donot use the products if it fails to meet specificatons for identity and performens parameters.