M-Tergitol 7 Agar Base

M1066

Intended Use:

Recommended for selective isolation and identification of injured coliforms from chlorinated water using membrane filtration technique.

Composition**

Ingredients	Gms / Litre
Peptone	2.500
Tryptone	2.500
Yeast extract	3.000
Lactose	20.000
Polyethelene ether w-1	5.000
Tergitol 7 (Sodium heptadecyl sulphate)	0.100
Bromo thymol blue	0.100
Bromo cresol purple	0.100
Agar	15.000
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 48.3 grams in 1000 ml purified / distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. For additional selectivity, after cooling the medium to 45-50°C aseptically add 1.0 µg of Penicillin G per milliliter of medium if desired. Mix well and pour into sterile Petri plates.

Principle And Interpretation

McFeters, Cameron and LeChevallier modified Tergitol 7 Agar to improve its selective and differential properties for the recovery of stressed coliforms from chlorinated water (6). They have reported that the selective media such as M-Endo Agars used to isolate gram-negative bacteria recovered only 30% or less as compared to recovery between 71 & 100% of injured coliforms on Tergitol 7 Agar (5). In their study of water samples, including samples containing laboratory-stressed coliforms and surface and drinking water samples, M-Tergitol 7 Agar Base recovered 43% more coliforms than on M-Endo Agar and 36% more coliforms than by using M-Endo Agar with a resuscitation technique (6).

McFeters et al. have also reported recovery of 3.1 times more fecal coliform. Coliforms on M-Tergitol 7 Agar Base than the standard M-FC method and 1.7 times more than the two-layer enrichment temperature acclimation procedure (4). In another study of 102 drinking water samples 8 to 38 fold more yield of coliforms has been reported on M-Tergitol 7 Agar Base as compared to M-Endo Agar LES (7).

The peptone and tryptone provide necessary nitrogenous growth factors. Yeast extract is the source of B-vitamins and organic nitrogen and carbon compounds. Lactose is the fermentable carbohydrate. Microorganism fermenting lactose produces yellow colonies due to reaction with bromothymol blue and bromocresol purple indicators. These indicators also act as inhibitors of non-coliform microbes.

Sodium heptadecyl sulphate (Tergitol 7) and polyoxyethylene ether W-1 are surface active agents which inhibit growth of gram-positive bacteria as well as swarming of *Proteus* (6,8). Inhibition of gram-positive bacteria can be improved by aseptically adding penicillin G (1.0 µg/ml) after autoclaving and cooling to 45°C.

Type of specimen

Water samples

Specimen Collection and Handling:

For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(1)
After use, contaminated materials must be sterilized by autoclaving before discarding.

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

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.

Quality Control

Appearance

Yellow to blue coloured homogeneous free flowing powder

Gelling

Firm comparable with 1.5% Agar gel.

Colour and Clarity of prepared medium

Purple coloured clear to slightly opalescent gel forms in Petri plates.

pH

7.20-7.60

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of colony
Escherichia coli ATCC 25922 (00013*)	50-100	Luxuriant	>=50%	yellow
Klebsiella aerogenes ATCC 13048 (00175*)	50-100	Luxuriant	>=50%	yellow
Salmonella Typhimurium ATCC 14028 (00031*)	50-100	Luxuriant	>=50%	blue
Salmonella Paratyphi A ATCC 9150	50-100	Luxuriant	>=50%	blue
Shigella flexneri ATCC 12022 (00126*)	50-100	Luxuriant	>=50%	blue
Salmonella Typhi ATCC 6539	50-100	Luxuriant	>=50%	blue
Staphylococcus aureus subsp. *aureus* ATCC 25923 (00034*)	>=10^4	Inhibited	0%	

Key : *Corresponding WDCM numbers.

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 20-30°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 (2,3).

Reference

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2. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
3. 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.
4. LeChevallier, Jakanoski, Camper and McFeters 1984 Appl. Environ. Microbiol. 48:371.

5. McFeters, Cameron and LeChevallier 1982 Appl. Environ. Microbiol., 43:97.
6. McFeters, LeChevallier and Cameron 1983, Appl. Environ. Microbiol. 45:484.
7. McFeters, Kippin and LeChevallier 1986, Appl. Environ. Microbiol., 51:1.
8. Pollard, 1946 Science, 103:758.

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