PRODUCT SPECIFICATION SHEET

KF Streptococcal Broth Base (DM124)

Intended Use
KF Streptococcal Broth Base (DM124) is recommended for detection and enumeration of faecal *Streptococci* in water and examination of faeces and other materials.

Product Summary and Explanation
Streptococci are spherical, gram-positive bacteria and form a part of the normal commensal flora of the mouth, skin, intestine, upper respiratory tract of humans. *Streptococci* found in the faeces form the faecal *Streptococci* and constitute of *Streptococci* with group D Lancefield antigens. The types include *Streptococcus faecalis, Streptococcus faecium, Streptococcus bovis* and *Streptococcus duran*. They are low-grade pathogens and rarely cause disease. However, they may cause urinary tract infection in catheterized patients; mixed abdominal wound infections following gut surgery; and endocarditis on abnormal valves.
Kenner et al. developed KF (Kenner Fecal) Streptococcal Broth for the detection and enumeration of *Enterococci* in waters.[1, 2] They found that this formulation was superior to other liquid media in the recovery of *Enterococci* in Most Probable Number (MPN) test systems. The medium is not specific for presumptive identification of group D streptococci. Other tests are required.[2-4] The addition of 1% TTC (2,3,5-Triphenyl Tetrazolium Chloride), in the membrane filter procedure causes the *Enterococci* to have a deep red color as a result of tetrazolium reduction to formazan, an insoluble red pigment, by actively growing microbial cells.

Principles of the Procedure
KF Streptococcal Broth Base contains special peptone along with yeast extract which provides nitrogen, carbon, sulphur, amino acids, vitamins and trace ingredients to the faecal *Streptococci*. Lactose and maltose are the fermentable carbohydrates and therefore serve as energy sources. Sodium azide is a selective agent, which inhibits the growth of gram-negative bacteria. Sodium glycerophosphate is a buffering agent. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Phenol red is the pH indicator. 2, 3, 5-Triphenyl Tetrazolium Chloride is reduced to insoluble formazan by actively metabolizing cells, resulting in the formation of pink or red colour. Bacteria resistant to azide, utilize lactose and / or maltose.

Formula / Liter

Ingredients	Gms / Liter
Peptone, special	10.00
Yeast extract	10.00
Sodium chloride	5.00
Sodium glycerophosphate	10.00
Sodium carbonate	0.636
Maltose	20.00
Lactose	1.00
Sodium azide	0.40
Phenol red	0.018
Final pH: 7.2 ± 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.
3. Sodium azide has tendency to form explosive metal azides with plumbing materials. It is advisable to use enough water to flush off the disposable.

Directions
1. Suspend 57.05 grams of the medium in one liter of distilled water.

2. Heat if necessary, to dissolve the medium completely.
3. Dispense desired amounts in tubes.
4. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
5. Cool to 50°C and aseptically add 10 ml of 1% 2, 3, 5-Triphenyl Tetrazolium Chloride (TTC) (MS029) to sterile medium.

Quality Control Specifications

Dehydrated Appearance	Light yellow to pinkish beige homogeneous free flowing powder
Prepared Medium	Red coloured, clear solution without any precipitate
Reaction of 5.7% Solution	pH : 7.2 ± 0.2 at 25°C
Gel Strength	Not Applicable

Expected Cultural Response: Cultural characteristics observed after an incubation at 35-37°C for 48-72 hours.

Sr. No.	Organisms	Results to be achieved		
		Inoculum (CFU)	Growth	Colour of Medium
1.	*Escherichia coli ATCC 25922*	>=10^3	Inhibited	
2.	*Enterobacter aerogenes ATCC 13048*	>=10^3	Inhibited	
3.	*Enterococcus faecalis ATCC 29212*	50-100	good-luxuriant	Yellow

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

Test Procedure

MPN Procedure

1. Inoculate tubes of the KF Streptococcus Broth Base with the appropriate amount of inoculum.
2. Incubate tubes at 35-37°C, with loosened caps, for 48-72 hours.

Membrane Filter Procedure

1. Place a sterile absorbent pad in each sterile Petri dish.
2. Saturate the pads with the sterile medium containing TTC.
3. Place an inoculated membrane filter, inoculated side up, on the saturated pad.
4. Incubate at 35-37°C in an atmosphere saturated with water vapour for 48-72 hours.

Results

MPN Procedure

MPN tubes positive for *Enterococci* are turbid with growth which is indicated as a change in medium color to yellow and does not produce foaming. When foaming is observed, confirmation for *Enterococci* should be made by Gram staining.

Membrane Filter Procedure

All red or pink colonies visible with 15X magnification are counted as *Enterococci* colonies.

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. Many strains of *S. bovis* and *S. equinus* are inhibited by azide.

2. Overheating may lower the pH, causing a decrease in the productivity of the medium.
3. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
4. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : KF Streptococcal Broth Base
Product Code : DM124
Available Pack sizes : 500gm

References

1. Kenner, Clark and Kabler. 1960. Am. J. Public Health 50:1553.
2. Kenner, Clark and Kabler. 1961. Appl. Microbiol. 9:15.
3. MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1. Williams & Wilkins, Baltimore, Md.
4. Facklam and Moody. 1970. Appl. Microbiol. 20:245.

Further Information

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