Technical Information

Feeley Gorman Broth (F.G. Broth)

Product Code: DM 1812

Application: - Feeley Gorman Broth is used for the cultivation of *Legionella* species.

Composition**

Ingredients	Gms / Litre
Casein acid hydrolysate	17.500
Beef extract	3.000
Starch	1.500
L-Cysteine hydrochloride	0.400
Ferric pyrophosphate, soluble	0.250
Final pH (at 25°C)	6.9±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Feeley et al formulated (1, 2) this medium, which is used as nonselective enrichment medium for isolation of *Legionella* species. *Legionella* is a gram-negative bacterium, including species that cause legionellosis or Legionnaires' disease, most notably *L. pneumophilia* (3). *Legionella* species are the causative agent of the human Legionnaires' disease and the lesser form, Pontiac fever. *Legionella* transmission occurs via aerosols- inhalation of mist droplets containing the bacteria. Common sources include cooling towers, domestic hot-water systems, fountains, and similar disseminators that tap into a public water supply. Natural sources of *Legionella* include freshwater ponds and creeks. Person-to-person transmission of *Legionella* has not been demonstrated (4).

Legionella are nutritionally fastidious and require L-cysteine and iron salts for their growth, which are provided in the medium. *Legionella* species are highly pathogenic microorganisms. Certain safety precautions must be taken when handling *Legionella* cultures.

Casein acid hydrolysate, beef extract, L-cysteine hydrochloride and ferric pyrophosphate serve as sources of nutrients. Incubation should be carried out in the presence of 2.5% carbon dioxide but if it exceeds the limit, *Legionella* growth is prevented due to formation of acidic condition. *Legionella* species can be identified by their characteristic fluorescence in presence of UV light (5, 6).

Safety Precautions for handling specimens and cultures. Use bacteriological safety hood (Biosafety cabinet). Wear gown, mask and gloves.

Decontaminate work surface with either 5% hypochlorite or 5% phenol. Autoclave all materials before discarding or cleaning. Since

Legionella disease is primarily a pulmonary infection, prevention and containment of aerosols is essential (7).

Methodology

Suspend 22.65 grams of dehydrated media in 1000 ml distilled water. Mix thoroughly & heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Shake well and dispense into sterile tubes.

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder

Colour and Clarity
Yellow coloured, clear to slightly opalescent solution in tubes

Reaction
Reaction of 2.3% w/v aqueous solution at 25°C. pH : 6.9±0.2

pH Range
6.70-7.10

Cultural Response
DM1812: Cultural characteristics observed in presence of 2.5% Carbon dioxide (CO_2) after an incubation at 35-37°C for 4 days .

Organism	Growth	Fluorescence under 366 nm
Legionella bozemanni ATCC 33217	good-luxuriant	blue-white
Legionella micdadei ATCC 33218	good-luxuriant	none
Legionella pneumophila ATCC 33153	good-luxuriant	bright yellow

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C away from light. Use before expiry date on the label.
Prepared Media: 2-8° in sealable plastic bags for 2-5 days.

Further Reading

1. Feeley J. C. et al, 1978, J. Clin. Microbiol., 8(3): 320.
2. Feeley J. C. et al, 1979, J. Clin. Microbiol., 10(4):437.
3. Ryan K. J., Ray C. G. (Eds.), 2004, Sherris Medical Microbiology, 4th Edition, McGraw Hill.
4. Winn, W. C. Jr. ,1996, Legionella (In: Baron's Medical Microbiology, Barron, S. et al, (Eds.), 4th Edition, University of Texas Medical Branch
5. Herbert G. A. et al, 1959, Ann. Intern, Med., 92(1):45.
6. Herbert G. A. et al, 1980, Ann. Intern. Med., 92(1):53.
7. MacFaddin J. F., Vol. I, 1985, Media for Isolation Cultivation-Identification-Maintenance of Medical Bacteria, Williams and Wilkins, Baltimore/ London,.

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