



Modified Shieh Agar (LMG Medium 215)

M2049

Intended Use:

Recommended for the cultivation and maintenance of *Flavobacterium spp*, *Flexibacter spp*.

Composition**

Ingredients	Gms / Litre
Peptone	5.000
Yeast extract	1.000
Magnesium sulphate heptahydrate	0.300
Dipotassium hydrogen phosphate	0.100
Potassium dihydrogen phosphate	0.050
Sodium bicarbonate	0.050
Sodium acetate	0.010
Barium chloride	0.009
Calcium chloride dihydrate	0.0067
Ferrous sulphate heptahydrate	0.001
Agar	15.000
Final pH (at 25°C)	7.2±0.1

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 21.38 grams (the equivalent weight of dehydrated medium per litre) 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. Cool to 45-50°C. Mix well and pour into sterile Petri plates or tubes or as desired.

Principle And Interpretation

Flavobacteria are found in soil and fresh water in a variety of environments. Several species are known to cause disease in freshwater fish (1). Some study suggests that *Flavobacterium spp*. may play a pathogenic role in patients with advanced HIV disease (2).

Modified Shieh Agar is basic culture media used for maintaining *Flavobacterium spp*. and *Flexibacter spp*. The original shieh's recipe was modified by omitting glucose, pyruvate and citrate as these were found not supporting the growth (3).

Peptone and yeast extract provide the necessary nitrogen, carbon compounds, vitamins and also some trace ingredients necessary for the growth of bacteria. Phosphates buffers the medium. Sodium chloride maintains the osmotic equilibrium of the medium. Other salts are source of inorganic ions.

Type of specimen

Food and soil samples

Specimen Collection and Handling:

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (4).

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. Some strains may show poor growth due to nutritional variations.
2. Further biochemical tests are required 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.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Light yellow coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 2.14% w/v aqueous solution at 25°C. pH : 7.2±0.1

pH

7.10-7.30

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth
<i>Flavobacterium species</i> ATCC 51823	50-100	good-luxuriant
<i>Escherichia coli</i> ATCC 25922 (00013*)	50-100	good-luxuriant
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 25923 (00034*)	50-100	good-luxuriant

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 (3,5).

Reference

- Bernardet; et al. (Jul 1994). "Cutting a Gordian Knot: Emended Classification and Description of the Genus *Flavobacterium*, Emended Description of the Family *Flavobacteriaceae*, and Proposal of *Flavobacterium hydatis* nom. nov. (Basonym, *Cytophaga aquatalis* Strohl and Tait 1978)". *Int J Syst Bacteriol.* 46 (3): 447–53. doi:10.1099/00207713-46-1-128.
- Manfredi R, Department of Clinical and Experimental Medicine, University of Bologna, Italy. *Handbook of Microbiological Media*, Fourth edition, Ronald Atlas.
- Isenberg, H.D. *Clinical Microbiology Procedures Handbook* 2nd Edition.
- Salfinger Y., and Tortorello M.L., 2015, *Compendium of Methods for the Microbiological Examination of Foods*, 5th Ed., American Public Health Association, Washington, D.C.
- 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.

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