PRODUCT SPECIFICATION SHEET

Hemmes Medium Base (DM343)

Intended Use
Hemmes Medium Base (DM343) is recommended for biochemical differentiation of *Salmonella* and *Shigella* species based on dextrose, lactose, sucrose fermentation, motility, hydrogen sulphide, indole and urease production.

Product Summary and Explanation
Salmonella and Shigella are gram-negative, facultatively anaerobic, non-sporulating, non-motile rods belonging to the *Enterobacteriaceae* family. They are commonly found in animals, primarily infecting the stomach and intestinal tissues.[1,2] Arizona group was originally named *Salmonella* Arizonae. It has been found mainly in reptiles and birds and occasionally in human patients with diarrhea or septicemia. These organisms are difficult to differentiate biochemically from *Escherichia coli*. Hemmes Medium is designed according to the formulation of Hemmes[3] is used for screening and differentiating *Salmonella* and *Shigella*. This medium is also named as Hemmes-7 Medium Base. The differentiation is based on seven reactions namely-dextrose, lactose, and sucrose fermentation, hydrogen sulphide production, urease detection, indole production and motility testing.

Principles of the Procedure
Hemmes Medium Base contains casein enzymic hydrolysate which provides carbon, nitrogen and other essential nutrients. Yeast extract is a source of vitamins and minerals. Ferrous sulphate and Sodium thiosulpahte provide the essential ions. Sodium chloride maintains the osmotic balance of the medium. Dextrose, lactose, and sucrose are fermentable carbohydrate sources. Phenol red is the pH indicator.

Formula / Liter

Ingredients	Gms / Liter
Casein enzymic hydrolysate	10.00
Yeast extract	3.00
Dextrose	0.30
Lactose	10.00
Sucrose	10.00
Sodium chloride	4.00
Ferrous sulphate	0.04
Sodium thiosulphate	0.10
Phenol red	0.015
Agar	5.50
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.

Directions
1. Suspend 42.95 grams of the medium in 950 ml of distilled water.
2. Heat to boiling to dissolve the medium completely.
3. Dispense 95 ml amounts into flasks.

4. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
5. Cool to about 50-55°C and aseptically add 5 ml of sterile 40% Urea Solution (MS031) per 95 ml basal medium.
6. Mix well and dispense into sterile test tubes.
7. Allow the tubed medium to cool and solidify in the slanted position to give a butt of at least 3 cm and slant of 2 cm.

Quality Control Specifications

Dehydrated Appearance	Light yellow to pink homogeneous free flowing powder
Prepared Medium	Red coloured, clear to slightly opalescent gel forms in tubes as slants
Reaction of 4.3% Solution	pH : 7.2 ± 0.2 at 25°C
Gel Strength	Semisolid, comparable with 0.55% Agar gel

Expected Cultural Response: Cultural characteristics observed with added 40% Urea solution (MS031), after an incubation at 35-37°C for 18-24 hours.

Sr. No.	Organisms	Results to be achieved					
		Inoculum (CFU)	Growth	H_2S	Indole	Motility	Urease
1.	***Cultural Response*** *Escherichia coli ATCC 25922*	50-100	good-luxuriant	negative reaction, no blackening of medium	positive reaction, red ring at the interface of the medium	positive, growth away from stabline causing turbidity	negative reaction, yellow slant
2.	*Proteus mirabilis ATCC 25933*	50-100	good-luxuriant	positive reaction, blackening of medium	negative reaction, no colour development / cloudy ring	variable, motility is temperature dependent It is more pronounced at 20°C and almost absent at 35°C	positive reaction, pink colour throughout
3.	*Salmonella Typhimurium ATCC 14028*	50-100	good-luxuriant	positive reaction, blackening of medium	negative reaction, no colour development / cloudy ring	positive, growth away from stabline causing turbidity	negative reaction, yellow slant
4.	*Staphylococcus aureus ATCC 25923*	50-100	good-luxuriant	negative reaction, no blackening of medium	negative reaction, no colour development / cloudy ring	negative, growth along the stabline, surrounding medium remains clear	negative reaction, yellow slant

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

Test Procedure

1. For the inoculation of this medium, pick isolated colonies from plates and streak the slant and stab the butt. Incubate at 37°C overnight.
2. Refer appropriate references for specific test procedures.

PRODUCT SPECIFICATION SHEET

Results

1. *Salmonella* and *Shigella* show a red slant and a yellow butt from dextrose fermentation.
2. Motility and gas formation are detectable because of the appropriate agar concentration.
3. Indole formation is also detectable due to the presence of casein enzymic hydrolysate.
4. Urease activity is detected by the formation of cerise colour.
5. Refer appropriate references and test procedures for interpretation of results.

Storage

Store the sealed bottle containing the dehydrated medium at 2 - 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. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Hemmes Medium Base
Product Code : DM343
Available Pack sizes : 500gm

References

1. Deming M. S., Jauxe R. V., Blake P. A., Dixas S. E., Fowler B. S., Jones T. S., Lockamy E. A., Patten C. A. and Sikes R. O., 1987, Am. J. Epidemiol., 126: 526.
2. Gill C. O., and Harris L. M., 1982, Appl. Environ. Microbiol., 44:259.
3. Harris N.V., Weiss N. S., and Nolan C. M., 1986, Am. J. Publ. Health, 76:406.
4. Vanderzant C. and Splittstoesser D. F., (Eds.), 1992, Compendium of Methods for the Microbiological Examination of Foods, 3rd Ed., APHA, Washington, D.C.

Further Information

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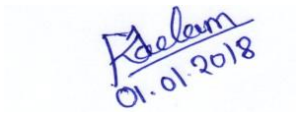		
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