Certificate of Analysis

PREPARED MICROBIOLOGICAL MEDIA

SHIGELLA BROTH WITH NOVOBIOCIN

Catalogue Number	CMS182-9ml-1
Product Description	Shigella Broth with Novobiocin, 9ml Tube,
Lot Number	
Date of Manufacture	
Expiry Date	

Intended Use:

Shigella Broth is a selective enrichment broth for the isolation of Shigella species from food.

Summary and Explanation:

Shigella was first recognized as the etiologic agent of bacillary dysentery or shigellosis in the 1890s.[1] Humans are the only natural reservoir. No natural food products harbor endogenous *Shigella* species, but a wide variety of foods may be contaminated.[1]

Shigellosis can manifest itself as a waterborne or foodborne disease. It is usually spread among people by food handlers with poor personal hygiene. Foods most often incriminated in the transmission of the disease have been potato salad, shellfish, raw vegetables, and Mexican food.[2]

The infectivity dose is extremely low. As few as ten *S. dysentery* bacilli can cause clinical disease, whereas 100-200 bacilli are needed for *S. sonnei* or *S. flexneri* infection.[1] One possible reason for this low-dose response may be that virulent *Shigellae* can withstand the low pH of gastric juice.[1] *Shigella* species are gram-negative, nonmotile, facultatively anaerobic, and non-spore-forming rods. They utilize glucose and other carbohydrates, producing acid but not gas. They do not decarboxylate lysine or ferment lactose. Shigella organisms may be difficult to distinguish biochemically from E. coli. The genus Shigella consists of four species: *S. dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei*.

Common contaminating bacteria found in food sources could mask the presence of any *Shigella* that could be present in the sample. Identification of *Shigella* is based on the successful isolation of the organism, biochemical characterization, and serological confirmation. *Shigella* Broth is based on the formula developed by Mehlman, Romero, and Wentz.2 Selectivity of the medium is achieved by the addition of novobiocin to the completed medium. Shigella Broth is recommended in standard test methods for use as a selective enrichment when isolating *Shigella* sp. from food samples.[3-6]

REAGENTS (FORMULA)

Tryptone…….….....	20.0	g
Potassium hydrogen phosphate.....	2.0	g
Potassium dihydrogen phosphate.....	2.0	g
Sodium chloride.....	5.0	g
Glucose ……...……..	1.0	g
Deionized Water	1000.0	ml

* Adjusted as required to meet performance standards Directions Suspend 30g in 1 liter of distilled water. Add 1.5 ml of sorbitan mono-oleate per liter. Sterilize by autoclaving at 121°C for 15 minutes. Cool to below 50°C and aseptically add 0.5mg/l novobiocin.

QA Testing:	**Result:**	**Expected:**
Characteristics	**Pass**	**Pass**
Sterility	**Pass**	**Pass**
Performance	**Pass**	**Pass**

pH	7.0 ± 0.2 @ 25°C
Appearance	Clear
Storage Condition	Refrigerate, 2-8°C
Sterility Method	Autoclave
Sterility Test	Pass

(Absence of growth following 72 hours at 30 - 35°C)

Control Media: Tryptone Soya Agar and X.L.D. Medium is challenged with 10-50 colony-forming units Reactions after incubation anaerobically at 41.5 ± 1°C for 16-20 hours After incubation, the broths are subcultured onto X.L.D. Medium (CM0469) and incubated at 37°C for 20-24 hours.

Organisms	Incubation	Results
Shigella sonnei ATCC 25931	41.5 ± 1°C for 16-20 hours	0.5-7mm irregular/smooth red colonies
Shigella sonnei ATCC 9290		0.5-7mm irregular/smooth red colonies
Shigella flexneri ATCC 12022		0.5-2mm irregular, red colonies
Shigella dysenteriae NCTC9721		0.5-2mm irregular, red colonies
Shigella boydii NCTC11462		0.5-2mm irregular, red colonies

BIBLIOGRAPHY:

1. Sureshbabu, Poothirikovil, Abuhammour, and Burny. 2008. *Shigella* infection. .
2. Mehlman, Romero and Wentz. 1985. J. Assoc. Off. Anal. Chem. 68:552.
3. U.S. Food and Drug Administration. 2001. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
4. Health Canada. The compendium of analytical methods, online. Food Directorate, Health Products, and Food Branch, Health Canada, Ottawa, Ontario Canada.
5. International Organization for Standardization. 2004 Microbiology of food and animal feeding stuff – horizontal method for the detection of *Shigella* spp. ISO 21567, 2004-11-01. International Organization for Standardization, Geneva, Switzerland.

6. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington. D.C.

Released By: Mehdi Kargar

Date:

All our prepared media products are manufactured at our site in RCFFN, University of Manitoba, and tested both at our site and by the department of Microbiology, University of Manitoba.
The generation of this certificate confirms all sterilization and performance criteria have been achieved.
NOTE: Expiry Date only valid if packs stored unopened at Ambient Room Temperature not exceeding 25°C.

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