SALMONELLA SHIGELLA AGAR (7152)

Intended Use
Salmonella Shigella Agar is used for the isolation of *Salmonella* spp. and some strains of *Shigella* spp.

Product Summary and Explanation
Salmonellosis continues to be an important public health problem worldwide. Infection with non-typhi *Salmonella* often causes a mild, self-limiting illness. Typhoid fever, caused by *Salmonella typhi*, is characterized by fever, headache, diarrhea, abdominal pain, and can result in fatal respiratory, hepatic, and or neurological damage.[1] This infection can result from the consumption of raw, undercooked, or improperly processed foods contaminated with *Salmonella* spp.

Shigellosis, caused by *Shigella* spp., is an intestinal illness characterized by abdominal pain, fever, and watery diarrhea. When associated with outbreaks, shigellosis is usually transmitted through contaminated food and/or water.

Salmonella Shigella Agar is a modification of the Desoxycholate Citrate Agar described by Leifson.[2] Salmonella Shigella Agar is superior to a number of other media for the isolation of *Salmonella* spp. and *Shigella* spp.[3] Salmonella Shigella Agar is recommended for testing clinical specimens and food testing for the presence of *Salmonella* spp. and some *Shigella* spp.[1,4,5]

Principles of the Procedure
Beef Extract, Enzymatic Digest of Casein, and Enzymatic Digest of Animal Tissue provide sources of nitrogen, carbon, and vitamins required for organism growth. Lactose is the carbohydrate present in Salmonella Shigella Agar. Bile Salts, Sodium Citrate and Brilliant Green inhibit Gram-positive bacteria, most coliform bacteria, and inhibit swarming *Proteus* spp., while allowing *Salmonella* spp. to grow. Sodium Thiosulfate and Ferric Citrate permit detection of hydrogen sulfide by the production of colonies with black centers. Neutral Red is the pH indicator.

Formula / Liter
Beef Extract ..... 5 g
Enzymatic Digest of Casein ..... 2.5 g
Enzymatic Digest of Animal Tissue..... 2.5 g
Lactose ..... 10 g
Bile Salts ..... 8.5 g
Sodium Citrate ..... 8.5 g
Sodium Thiosulfate ..... 8.5 g
Ferric Citrate ..... 1 g
Brilliant Green ..... 0.00033 g
Neutral Red..... 0.025 g
Agar ..... 13.5 g
Final pH: 7.0 ± 0.2 at 25°C
Formula may be adjusted and/or supplemented as required to meet performance specifications.

Precautions
1. For Laboratory Use.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions
1. Suspend 60 g of the medium in one liter of purified water.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. DO NOT AUTOCLAVE.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free-flowing, and light to medium pinkish-beige.

Prepared Appearance: Prepared medium is reddish-orange to peach and trace to slightly hazy.

Expected Cultural Response: Cultural response incubated aerobically at 35 ± 2°C and examined for growth after 18 - 24 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Results	
		Growth	Reaction
Enterococcus faecalis ATCC® 29212	10^3	Complete inhibition	---
Escherichia coli ATCC® 25922	10^3	Partial to complete inhibition	Pink to rose-red colonies, may have bile ppt
Salmonella typhimurium ATCC® 14028	10 - 300	Fair to good	Colorless colonies with black centers
Shigella flexneri ATCC® 12022	10 - 300	Fair to good	Colorless colonies

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

Test Procedure

For isolation of *Salmonella* spp. and *Shigella* spp. from clinical specimens, inoculate fecal samples and rectal swabs onto one quadrant of Salmonella Shigella Agar, streak for isolation. Incubate plates at 35°C, and examine after 24 and 48 hours for colonies resembling *Salmonella* spp. or *Shigella* spp. Consult appropriate references for food testing.

Results

Enteric organisms are differentiated by their ability to ferment lactose. *Salmonella* spp. and *Shigella* spp. are non-lactose fermenters and form colorless colonies on Salmonella Shigella Agar. H_2S positive *Salmonella* spp. produce black-center colonies. Some *Shigella* spp. are inhibited on Salmonella Shigella Agar. *E. coli* produces pink to red colonies and may have some bile precipitation.

Storage

Store 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 expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if appearance has changed from the original color.

Limitations of the Procedure

1. Salmonella Shigella Agar is highly selective and not recommended as the primary isolation of *Shigella.* [1,2,6] Some *Shigella* spp. may be inhibited.
2. A few nonpathogenic organisms may grow on Salmonella Shigella Agar. These organisms can be differentiated by their ability to ferment lactose and other confirmatory tests.

Packaging

Salmonella Shigella Agar	**Code No.**	**7152A**	**500 g**
		7152B	**2 kg**
		7152C	**10 kg**

References

1. **P. R. Murray, E. J. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Yolken (eds.).** Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D. C.
2. **Leifson, E.** 1935. New culture media based on sodium desoxycholate for the isolation of intestinal pathogens and for the enumeration of colon bacilli in milk and water. J. Pathol. Bacteriol **40**:581.
3. **Rose, H. M., and M. H. Kolodny.** 1942. The use of SS (*Shigella-Salmonella*) Agar for the isolation of Flexner Dysentery bacilli from the feces. J. Lab. Clin. Med. **27**:1081-1083.
4. **Isenberg, H. D. (ed.).** 1992. Interpretation of aerobic bacterial growth on primary culture media, Clinical microbiology procedures handbook, vol. 1 p. 1.61-1.67. American Society for Microbiology, Washington, D.C.
5. **Vanderzant, C., and D. F. Splittstoesser (eds.).** 1992. Compendium of methods for the microbiological examination of foods, 3rd ed. American Public Health Association, Washington, D.C.
6. **Taylor, W. I., and B. Harris.** 1965. Isolation of shigellae. II. Comparision of plating media and enrichment broths. Am. J. Clin. Pathol. **44**:476.
7. **McFaddin, J. F.** 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, Vol. 1. Williams & Wilkins, Baltimore, MD.

Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.

NEOGEN CORPORATION
620 Lesher Place, Lansing MI 48912
517/372-9200 • 800/783-3212 • fax: 800/875-8563
neogen-info@neogen.com • www.neogen.com