

RAINBOW[®] AGAR SALMONELLA

TECHNICAL INFORMATION

BIOLOG

INTENDED USE For laboratory use as a selective, chromogenic culture medium to aid in the detection and isolation of H₂S-producing *Salmonella* species.

SUMMARY OF TEST The Centers for Disease Control (USPHS-CDC) have classified Salmonella infection as a nationally reportable disease. Furthermore, the United States Department of Agriculture-Food Safety Inspection Service (USDA-FSIS) has instituted *Salmonella* pathogen reduction performance standards for the meat processing and packaging industry¹. *Salmonella* was targeted “because it is the primary cause of foodborne illness among enteric pathogens”¹. The Manual of Clinical Microbiology lists over 14 broad food categories that can be implicated in cases of salmonellosis². Infections caused by *Salmonella* are usually self-limiting gastroenteritis, but some infections can be life-threatening such as enteric fever².

Rainbow Agar Salmonella utilizes an enhanced detection chemistry to determine H₂S production among *Salmonella* spp.. Black colonies are formed by even weak H₂S-producing strains. In addition, novel selective agents increase the recovery rate of *Salmonella* while inhibiting the growth of other enteric bacteria and inhibiting H₂S production by *Citrobacter* and other H₂S positive enteric species.

CONTENTS This sealed bottle contains dry powder to make Rainbow Agar Salmonella. 47 grams of powder will make 1 liter or approximately 50 plates.

PREPARATION This medium can be prepared in any volume to suit the user’s needs. To prepare 1 liter of Rainbow Agar Salmonella, mix 47 grams of powder into 990 ml of purified water, add 10 ml of 35% glycerol, stir until components are evenly dispersed, and autoclave for 10 minutes at 15 lbs. pressure and 121°C. DO NOT exceed 10 minutes at this heat and pressure. After autoclaving, the medium will be green and turbid. Cool agar to 45-50°C before pouring. Stir and dispense approximately 20 ml of media into each petri plate. The medium is ready to use as soon as it has cooled, gelled and the surface has dried. The final medium should be transparent and light yellow in color. No pH adjustment is needed. The final pH should be pH 7.2-7.6. For samples that have a high background count of enteric bacteria, 100 mg/L sodium selenite can be added to make the medium more selective.

STORAGE Rainbow Agar Salmonella powdered medium is extremely hygroscopic and should be stored at 2°C to 25°C in a dry environment with the lid closed tightly. Unopened bottles may be stored in this manner until the expiration date on the label. Rainbow Agar Salmonella plates are stable for 12 weeks when stored under refrigeration and packaged in cellophane to inhibit moisture loss.

USER QUALITY CONTROL The following organisms are recommended if quality control is desired or required. Inoculate Rainbow Agar Salmonella plates with the following strains by streaking for isolation, then incubate for 24 hours at 35°C without elevated CO₂. Colony color should be read from isolated colonies.

Organism	ATCC [®] number	Color on Rainbow Agar Salmonella
<i>Salmonella</i> subspecies 1	14028	Black
<i>Escherichia coli</i>	11775	White

PROCEDURE Inoculate the medium by streaking or spreading a sample suspected of containing *Salmonella* on the surface of the medium. Incubate the plates for 20 to 24 hours at 35°C without elevated CO₂. Some strains may need longer incubation for color development. (See the expected results below). Incubation beyond 36 hours may result in the detection of other H₂S positive bacteria (e.g., *Citrobacter*). *Salmonella* colonies are detected by their distinctive black coloration. H₂S production may be concentrated at the edges of heavy growth with central areas gray or white. Isolated colonies will be black. If 100 mg/L sodium selenite is added to make the medium more selective, the background microbial growth may appear orange due to selenite reduction.

EXPECTED RESULTS^a

Organism	Black colonies
<i>Salmonella</i> subspecies 1:	
<i>enteritidis</i>	+++
<i>choleraesuis</i>	++
<i>paratyphi A</i>	-
<i>paratyphi C</i>	+
<i>typhi</i>	+/-
<i>gallinarum</i>	-
<i>pullorum</i>	-
<i>Salmonella</i> subspecies 2	+++
<i>Salmonella</i> subspecies 3	+++
<i>Salmonella</i> subspecies 4	+++
<i>Salmonella</i> subspecies 5	+++
<i>Salmonella</i> subspecies 6	+++

^aColony coloration is indicative of isolated colonies.

- +++ Intensely black colonies in ≤16 hours.
- ++ Black colonies in 16 to 24 hours.
- + Black colonies in 24 to 36 hours.
- +/- Black or gray colonies in 24 to 48 hours. Some strains are white.
- Black colonies do not form.

LIMITATIONS Some *Citrobacter* strains will turn black if the plates are allowed to incubate 36 hours or longer. The pyrrolidonylamidase (PYR) spot test may be used to differentiate *Salmonella* spp. (PYR negative) from *Citrobacter* spp. (PYR positive).

REFERENCES

- United States Department of Agriculture-Food Safety Inspection Service. 1996. Improving the Safety of Meat and Poultry.
- Murray, P.R., E.J. Baron, M.A. Pfaller, F.C. Tenover, and R.H. Tenover. 1995. Manual of Clinical Microbiology, 6th edition, pp. 221, 452-453. ASM Press, Washington, D.C.

BIOLOG ORDERING INFORMATION

Rainbow Agar Salmonella

Catalog Number	Description
80201	Dehydrated—500 g

Biolog Order Desk: 800-284-4949
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