

RAPPAPORT-VASSILIADIS (MSRV) MEDIUM SEMISOLID MODIFIED (NCM0289)

Intended Use

Rappaport-Vassiliadis (MSRV) Medium Semisolid Modified is used with Novobiocin for the rapid detection of motile *Salmonella* spp. in a laboratory setting. Rappaport-Vassiliadis (MSRV) Medium Semisolid Modified is not intended for use in the diagnosis of disease or other conditions in humans.

Description

Rappaport-Vassiliadis (MSRV) Medium Semisolid Modified is a modification of Rappaport-Vassiliadis enrichment broth for detecting motile *Salmonella* spp. in food products. The original research on MSRV Medium revealed a semisolid could be used as a rapid and sensitive test for isolating motile *Salmonella* from food products following pre-enrichment or selective enrichment. The semisolid medium allows motility to be detected as halos of growth around the original point of inoculation.

MSRV Medium is recommended by the European Chocolate Manufacturer's Association. A collaborative study performed with support of American Cocoa Research Institute and the Canadian Chocolate Manufacturer's Association resulted in first action adoption of the MSRV method by AOAC International.

Typical Formulation

Enzymatic Digest of Casein	4.59 g/L
Casein Acid Hydrolysate	4.59 g/L
Sodium Chloride	7.34 g/L
Potassium Dihydrogen Phosphate	1.47 g/L
Magnesium Chloride, Anhydrous	10.93 g/L
Malachite Green Oxalate	0.037 g/L
Agar	2.70 g/L

Final pH: 5.6 ± 0.2 at 25°C

Formula may be adjusted and/or supplemented as required to meet performance specifications.

Novobiocin Supplement (7985)

Novobiocin, 20 mg

Precaution

Refer to SDS

Preparation

1. Suspend 31.6 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.**
4. Cool medium to 45 - 50°C and aseptically add 10 ml of Novobiocin Supplement (7985).
5. Mix well and dispense into petri dishes.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and pale blue beige to light blue.

Prepared Appearance: Prepared medium is trace to slightly hazy and turquoise blue.

Expected Cultural Response: Cultural response incubated aerobically at 42°C and examined for growth after 18 – 24 hours.



Technical Specification Sheet



Microorganism	Approx. Inoculum (per drop)	Expected Results	
		Growth	Motility
<i>Citrobacter freundii</i> ATCC® 8090	> 10,000	Partial to completely inhibited	None
<i>Pseudomonas aeruginosa</i> ATCC® 27853	> 10,000	Inhibited	None
<i>Salmonella choleraesuis</i> ATCC® 13076	> 10,000	Growth	Halo
<i>Salmonella typhimurium</i> ATCC® 14028	> 10,000	Growth	Halo

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

Test Procedure

Pre-Enrichment: Add 25 g of cocoa or chocolate to 225 mL of sterile reconstituted nonfat dry milk with 0.45 mL of a 1% aqueous brilliant green dye solution; mix well. Incubate at 35°C for 20 ± 2 hours.

Selective Enrichment: Inoculate 10 mL of Tetrathionate Broth (prewarmed to 35°C) with 1 mL of the pre-enrichment culture. Incubate at 35°C for 8 ± 0.5 hours.

Motility Enrichment on MSR/V: After selective enrichment incubation, mix the broth culture. Inoculate 3 drops at separate spots on an MSR/V plate. Incubate at 42 ± 0.5°C for 16 ± 0.5 hours.

Results

Positive: Growth of migrated cells is visible as a grey-white, turbid zone extending out from the inoculated drop. Test sample is considered presumptively positive for motile *Salmonella* spp.

Negative: Medium remains blue-green around inoculation drops, with no grey-white, turbid zone extending out from the drop. Test sample is considered negative for motile *Salmonella* spp.

Expiration

Refer to 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

The combined inhibitory factors of this medium may inhibit certain *Salmonella*, such as *S. typhi* and *S. choleraesuis*. Isolation techniques should include a variety of enrichment broths and isolation media.

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.

References

1. **Rappaport, F., N. Konforti, and B. Navon.** 1956. A new enrichment medium for certain salmonellae. *J. Clin. Pathol.* **9**:261-266.
2. **Vassiliadis, P., D. Trichopoulos, A. Kalandidi, and E. Xirouchaki.** 1978. Isolation of salmonellae from sewage with a new procedure of enrichment. *J. Appl. Bacteriol.* **44**:233-239.
3. **DeSmedt, J. M., R. Bolderdijk, H. Rappold, and D. Lautenschlaeger.** 1986. Rapid *Salmonella* detection in food by motility enrichment on a modified semi-solid Rappaport-Vassiliadis Medium. *J. Food Prot.* **49**:510-514.
4. **DeSmedt, J. M., and R. Bolderdijk.** 1987. Dynamics of *Salmonella* isolation with modified semi-solid Rappaport-Vassiliadis Medium. *J. Food Prot.* **50**:658-661.



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Technical Specification Sheet



5. **DeSmedt, J. M., R. Bolderdijk, and J. Milas.** 1994. *Salmonella* detection in cocoa and chocolate by motility enrichment on modified semi-solid Rappaport-Vassiliadis Medium: a collaborative study. J. AOAC Int. **77**:365-373.
6. **www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalyticalManualBAM/default.htm**.

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