Rappaport Vassiliadis Salmonella (RVS) Soy Broth

Intended Use
Rappaport Vassiliadis Salmonella (RVS) Soy Broth is used for selectively enriching Salmonella in food and environmental samples.

Meets United States Pharmacopeia (USP), European Pharmacopoeia (EP) and Japanese Pharmacopoeia (JP)1-3 performance specifications, where applicable.

Summary and Explanation
Rappaport et al.4 formulated an enrichment medium for Salmonella that included very high amounts of malachite green and magnesium chloride as inhibitors. The original Rappaport medium was developed for the enrichment of S. paratyphi and other serotypes that were known to be relatively resistant to brilliant green. In addition, magnesium chloride was found to counteract the toxic effect of the dye for Salmonella.5 Vassiliadis et al. modified the formulation by reducing the concentration of the malachite green to one third.6

Van Schothorst and Renaud reported that using soy peptone instead of animal peptone improved recovery rates of Salmonella.7 Similar results were obtained in several other studies.8-11

Vassiliadis et al. recommended incubation of RV media at 43°C for maximum selectivity.8 Any deviation above 43°C may be lethal for Salmonella. Later, work by Peterz showed that incubation at 41.5 ± 0.5°C for 24 hours improved recovery of Salmonella spp.12

RVS Soy Broth is a selective enrichment medium that is used following pre-enrichment of a sample in a suitable pre-enrichment medium. It has gained approval for use in analyzing milk and milk products,13 food,14,15 animal feed,15 and nonsterile pharmaceutical products.1 This medium selectively enriches for salmonellae because bacteria, including other intestinal bacteria, are typically inhibited by malachite green, high osmotic pressure and/or low pH. S. Typhi and S. Paratyphi A are sensitive to malachite green and may be inhibited.

Principles of the Procedure
RVS Soy Broth contains soy peptone as the carbon and nitrogen source for general growth requirements. Magnesium chloride raises the osmotic pressure in the medium. Sodium chloride maintains osmotic balance. Dipotassium phosphate and potassium dihydrogen phosphate are buffering agents. Malachite green is inhibitory to organisms other than salmonellae. The low pH of the medium, combined with the presence of malachite green and magnesium chloride, helps to select for the highly resistant Salmonella spp.

Formula
Difco™ RVS Soy Broth

Approximate Formula* Per Liter
Soy Peptone.................................................................4.5 g
Magnesium Chloride (anhydrous)..............................13.5 g
Sodium Chloride ........................................................9.0 g
Dipotassium Phosphate ..............................................0.03 g
Potassium Dihydrogen Phosphate .........................1.45 g
Malachite Green ................................................36.0 mg

*Adjusted and/or supplemented as required to meet performance criteria.

Directions for Preparation from Dehydrated Product
1. Suspend 28.5 g of the powder in 1 L of purified water. Mix thoroughly.
2. Warm slightly to completely dissolve the powder.
3. Dispense 10 mL amounts into suitable containers.
4. Autoclave at 115°C (10 psi pressure) for 15 minutes.
5. Test samples of the finished product for performance using stable, typical control cultures.

Sample Collection and Handling
Follow appropriate standard methods for details on sample collection and preparation according to sample type and geographic location.1,13-15

Procedure
Refer to appropriate references for details on test methods using RVS Soy Broth.1,13-15 Inoculate tubes with the test sample and incubate as instructed in appropriate references.1,13-15

Expected Results
Examine selective plates for typical Salmonella colonies. Confirm identification of isolates by biochemical and/or serological tests as directed in appropriate references.

Limitation of the Procedure
The combined inhibitory factors of this medium (malachite green, magnesium chloride, low pH) may inhibit certain Salmonella, such as S. Typhi and S. Paratyphi A. Isolation techniques should include a variety of enrichment broths and isolation media.
User Quality Control

Identity Specifications

Difco™ RVS Soy Broth

Dehydrated Appearance: Pale green to green, free-flowing, homogeneous.

Solution: 2.85% solution, soluble in purified water upon gentle heating. Solution is blue, clear.

Prepared Appearance: Blue, clear.

Solution at 25°C: pH 5.2 ± 0.2

BBL™ RVS Soy Broth (prepared)

Appearance: Blue and clear.

Reaction at 25°C: pH 5.2 ± 0.2

Cultural Response

Difco™ RVS Soy Broth

Prepare the medium per label directions. Inoculate and incubate at 30-35°C for 24 hours. After incubation, subculture to XLD Agar plates and incubate at 30-35°C for 18-48 hours.

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<td>Staphylococcus aureus</td>
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BBL™ RVS Soy Broth (prepared)

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References


Availability

Difco™ RVS Soy Broth

CCAM EP ISO JP USDA USP
Cat. No. 214943 Dehydrated — 500 g†

BBL™ RVS Soy Broth

CCAM EP ISO JP USDA USP
Cat. No. 215199 Prepared Tubes, 10 mL — Pkg. of 10†
† QC testing performed according to USP/EP/JP performance specifications.