Rappaport Vassiliadis Soya Broth (RVS) — Technical Data Sheet

Catalogue Number: AS-1338 | acc. harm. EP/USP/JP

Product Identification

Product Name	Rappaport Vassiliadis Soya Broth (RVS)
Catalogue Number	AS-1338
HS Code	3821.00.00
Medium Type	Selective enrichment broth — Salmonella spp.
Pharmacopoeial Harmonisation	EP 2.6.13 | USP <62> | JP Chapter 4.05
Method Standard	ISO 6579-1:2017 (food) | ISO 19250 (water) | APHA SM 9260 B
Physical Form	Dehydrated powder
Colour (powder)	Pale green to greenish-brown
Colour (prepared)	Bluish-green, clear liquid
Also known as	RVS Broth, RV Broth (Soya), Rappaport-Vassiliadis Soya Broth, RVSA

Mode of Action

Malachite green (0.036 g/L): Inhibits Gram-positive organisms and most competing Gram-negative bacteria including coliforms. Salmonella exhibits superior resistance to this triphenylmethane dye.

Magnesium chloride (13.4 g/L): Raises osmolarity to ~1400 mOsm/kg. Salmonella tolerates elevated Mg^{2+} and osmotic stress better than most competing flora including E. coli and Proteus spp.

Acidic pH (5.2): Further inhibits competing Gram-negative bacteria while Salmonella — including stressed cells — remains viable and grows selectively.

Soy peptone base: Provides balanced amino acid and vitamin profile optimal for Salmonella enrichment, with superior performance to casein digest variants for stressed cell recovery.

Composition (per litre of prepared medium)

Ingredient	CAS Number	Function	Amount (g/L)
Soy Peptone	73049-73-7	Nitrogen and carbon source — balanced amino acids	5.0
Sodium Chloride	7647-14-5	Base osmotic balance	8.0
KH_2PO_4 (Monopotassium phosphate)	7778-77-0	Acidic pH buffer component	1.6
K_2HPO_4 (Dipotassium phosphate)	7758-11-4	Alkaline pH buffer component	0.8
$MgCl_2 \cdot 6H_2O$ (Magnesium chloride)	7791-18-6	Elevated osmotic pressure — key selective agent	13.4
Malachite Green Oxalate	2437-29-8	Selective inhibitor — Gram-positives and non-Salmonella	0.036

Total: 28.836 g/L | Final pH: 5.2 ± 0.2 at 25 °C | Osmolarity: ~1400 mOsm/kg

Physical & Chemical Specifications

Appearance (powder)	Pale green to greenish-brown homogeneous powder
Appearance (prepared)	Bluish-green clear liquid — no precipitate
pH (prepared medium, 25 °C)	5.2 ± 0.2
Loss on Drying (moisture)	≤ 5.0%
Osmolarity (prepared)	~1400 mOsm/kg (elevated by $MgCl_2$)
Malachite green concentration	0.036 g/L — critical for selectivity; do not exceed
Autoclave temperature	115 °C for 15 min ONLY — 121 °C degrades malachite green
Selectivity	High — inhibits most Gram-positives and non-Salmonella Gram-negatives

Performance / Quality Control

Inoculum: ≤100 CFU per ATCC strain. Incubation: 41.5 °C aerobic (ISO 6579-1 standard temperature for RVS).

Organism	ATCC No.	Inoculum (CFU)	Incubation	Expected Result
Salmonella typhimurium	14028	≤ 100	24 ± 3 h, 41.5 °C, aerobic	**Growth — enrichment**
Salmonella abony	BAA-2162	≤ 100	24 ± 3 h, 41.5 °C, aerobic	**Growth — enrichment**
Salmonella enteritidis	13076	≤ 100	24 ± 3 h, 41.5 °C, aerobic	**Growth — enrichment**
Escherichia coli	25922	≤ 100	24 ± 3 h, 41.5 °C, aerobic	**Inhibited — partial/no growth**
Enterococcus faecalis	29212	≤ 100	24 ± 3 h, 41.5 °C, aerobic	**Inhibited — no growth**

Pharmacopoeial QC: For EP/USP/JP compliance, test Salmonella abony (EP) or Salmonella typhimurium as per the applicable pharmacopoeial method. Non-target organism inhibition must be confirmed.

Preparation Protocol

1. Dissolve 26.75 g per litre in purified water with gentle agitation at room temperature. Do NOT heat.
2. Dispense: 10 mL per tube (ISO 6579-1 secondary enrichment) or 100 mL per flask.
3. Autoclave at 115 °C for 15 minutes only. DO NOT use 121 °C.
4. Cool to room temperature. Appearance: bluish-green, clear.
5. Store at 2–8 °C, protected from light. Use within 3 months.
6. Inoculate with 0.1 mL of BPW pre-enrichment culture per 10 mL RVS Broth (1:100 ratio per ISO 6579-1).

Key Limitations

- Secondary enrichment only — requires prior non-selective pre-enrichment (BPW or equivalent)
- Autoclave at 115 °C ONLY — 121 °C irreversibly degrades malachite green, eliminating selectivity
- Some Salmonella strains (e.g. S. typhi) may be partially inhibited — use Selenite Cystine Broth as parallel enrichment
- Confirmed positive results require subculture to selective agar (XLD, MLCB, Chromogenic Salmonella) plus biochemical/serological confirmation
- Not suitable for direct inoculation without prior pre-enrichment step

Storage & Stability

Dehydrated powder	15–30 °C, tightly sealed, dry, protected from light
Prepared medium	2–8 °C, protected from light; use within 3 months
Shelf life (powder)	As per labelled expiry date

Regulatory & Quality Standards

EP 2.6.13	Microbial examination of non-sterile products: Tests for Salmonella
USP <62>	Tests for specified microorganisms — Salmonella
JP Chapter 4.05	Microbial Limit Test II — Salmonella
ISO 6579-1:2017	Microbiology of food chain — Detection of Salmonella
ISO 19250:2010	Water quality — Detection of Salmonella spp.
Country of Manufacture	Australia

Literature & References

Vassiliadis, P. et al. (1981). Salmonella isolation with Rappaport's Vassiliadis medium. J. Appl. Bacteriol., 51(2), 233–239.

Rappaport, F., Konforti, N. & Navon, B. (1954). A new enrichment medium for certain Salmonellae. J. Clin. Pathol., 9(3), 261–266.

ISO 6579-1:2017. Detection, enumeration and serotyping of Salmonella — Part 1: Detection. ISO, Geneva.

ISO 19250:2010. Water quality — Detection of Salmonella spp. ISO, Geneva.

EP Chapter 2.6.13; USP <62>; JP Chapter 4.05 — harmonised Salmonella test methods.

Van Schothorst, M. & Renaud, A.M. (1983). Dynamics of Salmonella isolation with modified Rappaport's medium. J. Appl. Bacteriol., 54(2), 209–215.

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