

## Technical Data Sheet

### GranuCult™

### RVS (RAPPAPORT-VASSILIADIS-Soya) Broth (Base) acc. ISO 6579

Ordering number: 1.07700.0500

For the selective enrichment of *Salmonella* from food and animal feed, water and other materials.

This culture medium complies with the specifications given by EN ISO 6579, EN ISO/FDIS 6579-1, EN ISO 6785 I IDF 93, EN ISO 19250.

#### Mode of Action

A modification of the originally described Rappaport medium, using soya peptone instead of tryptone (peptone from casein) was reported to improve recovery rates of *Salmonella* (Van Schothorst and Renaud, 1983 and Van Schothorst et al., 1987). This is in use as Rappaport-Vassiliadis soya peptone (RVS) broth.

The efficiency of RVS broth for salmonella is based on the following: (a) the ability of *Salmonella* spp. to multiply at relatively high osmotic pressures at relatively low pH values, at a high temperature and with modest nutritional requirements; and (b) the suppression of the toxic effect of malachite green towards salmonellae by the presence of magnesium chloride.

For the detection of some *Salmonella* serovars, other culture steps, e.g. other selective enrichment media, may be needed. For *Salmonella* Typhi and *Salmonella* Paratyphi, the procedure is described by EN ISO/FDIS 6579-1.

## Typical Composition

| Specified by ISO 6579, ISO FDIS 6579-1                                                              |           | GranuCult™ RVS (RAPPAPORT-VASSILIADIS-Soya) Broth (Base) acc. ISO 6579 |           |
|-----------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------|-----------|
| Enzymatic Digest of Soya                                                                            | 4.5 g/l   | Enzymatic Digest of Soya                                               | 4.5 g/l   |
| NaCl                                                                                                | 7.2 g/l   | NaCl                                                                   | 7.2 g/l   |
| Potassium Dihydrogen Phosphate (KH <sub>2</sub> PO <sub>4</sub> + K <sub>2</sub> HPO <sub>4</sub> ) | 1.44 g/l  | K <sub>2</sub> HPO <sub>4</sub>                                        | 0.18 g/l  |
|                                                                                                     |           | KH <sub>2</sub> PO <sub>4</sub>                                        | 1.26 g/l  |
|                                                                                                     |           |                                                                        | 1.44 g/l  |
| MgCl <sub>2</sub> , anhydrous                                                                       | 13.4 g/l  | MgCl <sub>2</sub> , anhydrous                                          | 13.4 g/l  |
| Malachite Green Oxalate                                                                             | 0.036 g/l | Malachite Green Oxalate                                                | 0.036 g/l |
| Water                                                                                               | 1000 ml/l | Water                                                                  | n/a       |
| pH at 25 °C                                                                                         | 5.2 ± 0.2 | pH at 25 °C                                                            | 5.2 ± 0.2 |

## Preparation

Dissolve 41.8 g in 1 l of purified water. Dispense into tubes or flasks and autoclave 15 min at 115 °C.

The prepared medium is clear and dark-blue. The pH value at 25 °C is in the range of 5.0-5.4.

## Experimental Procedure and Evaluation

Depend on the purpose for which the medium is used.

Allow the RVS broth to equilibrate at room temperature if it was stored at a lower temperature.

According to EN ISO 6579, transfer 0.1 ml of the culture obtained in the pre-enrichment (Buffered Peptone Water) to a tube containing 10 ml of RVS broth. Minimize the transfer of particulate material from the pre-enrichment into the selective enrichment medium.

Incubate the inoculated broth under aerobic conditions, e.g. according to EN ISO 6579 40.5-42.5 °C for 21-27 h. Care should be taken that the maximum allowed temperature (42.5 °C) is not exceed.

From the culture obtained in RVS broth selective solid media are inoculated, see details given by EN ISO 6579 or other appropriate standard.

According to EN ISO/FDIS 6579-1, for some products it may be necessary to incubate the selective enrichment medium for an additional 24 h, then follow the same plating-out procedure as described above.

According to EN ISO/FDIS 6579-1, it is permissible to store the selective enrichment after incubation at +2 °C to +8 °C for a maximum of 72 h.

## Storage

Store at +15 °C to +25 °C, dry and tightly closed. Do not use clumped or discolored medium. Protect from UV light (including sun light). For *in vitro* use only.

According to EN ISO/FDIS 6579-1, self-prepared complete medium can be stored in closed containers at +2 °C to +8 °C in the dark and protected against evaporation for up to three months.

## Quality Control

| Function     | Control strains                                                                                                                      | Incubation              | Method of control | Criteria                                                    | Expected results                                     |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------|-------------------------------------------------------------|------------------------------------------------------|
| Productivity | <i>Salmonella</i> Enteritidis ATCC® 13076<br>+<br><i>Escherichia coli</i> ATCC® 8739 +<br><i>Pseudomonas aeruginosa</i> ATCC® 27853  | 21-27 h at 40.5-42.5 °C | Qualitative       | > 10 colonies on XLD                                        | Colonies with black center on XLD agar acc. ISO 6579 |
|              | <i>Salmonella</i> Typhimurium ATCC® 14028<br>+<br><i>Escherichia coli</i> ATCC® 25922 +<br><i>Pseudomonas aeruginosa</i> ATCC® 27853 |                         |                   |                                                             |                                                      |
| Selectivity  | <i>Escherichia coli</i> ATCC® 8739                                                                                                   | 21-27 h at 40.5-42.5 °C | Qualitative       | Partial inhibition ≤ 100 colonies on Tryptic Soy Agar (TSA) | -                                                    |
|              | <i>Escherichia coli</i> ATCC® 25922                                                                                                  |                         |                   |                                                             |                                                      |
|              | <i>Enterococcus faecalis</i> ATCC® 19433                                                                                             |                         |                   | < 10 colonies on Tryptic Soy Agar (TSA)                     |                                                      |
|              | <i>Enterococcus faecalis</i> ATCC® 29212                                                                                             |                         |                   |                                                             |                                                      |

Please refer to the actual batch related Certificate of Analysis.

The performance test is in accordance with the current version of EN ISO 11133.

## Literature

ISO International Standardisation Organisation. Microbiology of food and animal feeding stuffs - Horizontal method for the detection of *Salmonella* spp. EN ISO 6579:2002.

ISO International Standardisation Organisation. Microbiology of the food chain - Horizontal method for the detection, enumeration and serotyping of *Salmonella* - Part 1: Horizontal method for the detection of *Salmonella* spp. EN ISO/FDIS 6579-1:2015.

ISO International Standardisation Organisation. Milk and milk products - Detection of *Salmonella* spp. EN ISO 6785 I IDF 93:2001.

ISO International Standardisation Organisation. Water quality - Detection of *Salmonella* spp. EN ISO 19250:2010.

ISO International Standardisation Organisation. Microbiology of food, animal feed and water - Preparation, production, storage and performance testing of culture media. EN ISO 11133:2014.

Mooijman, K.A. (2012): Culture media for the isolation of *Salmonella*. In: Handbook of Culture Media for Food and Water Microbiology. (Corry, J.E.L., Curtis, G.D.W. and Baird, R.M. eds)., pp. 261-286. Royal Society of Chemistry, Cambridge, UK.

Van Schothorst M. and Renaud, A.M. (1983): Dynamics of salmonellae isolation with modified Rappaport's medium (R 10). J. Appl. Bact. **54**: 209-215.

Van Schothorst, M., Renaud, A.M. and van Beck, C. (1987): *Salmonella* isolation using RVS broth and MLCB agar. Food Microbiol. **4**: 11-18.

## Ordering Information

| Product                                                                                                 | Cat. No.     | Pack size  | Other pack sizes available                                |
|---------------------------------------------------------------------------------------------------------|--------------|------------|-----------------------------------------------------------|
| GranuCult™ RVS (RAPPAPORT-VASSILIADIS-Soya) Broth (Base) acc. ISO 6579                                  | 1.07700.0500 | 500 g      |                                                           |
| Novobiocin Sodium Salt                                                                                  | N6160-1-G    | 1 g        | 5 g, 25 g                                                 |
| ReadyTube™ 10 RVS Broth ISO 6579                                                                        | 1.46694.0020 | 20 x 10 ml | 100 x 10 ml                                               |
| GranuCult™ Buffered Peptone Water acc. ISO 6579, ISO 21528, ISO 22964, FDA-BAM and EP                   | 1.07228.0500 | 500 g      | 5 kg, 25 kg                                               |
| Readybag® Buffered Peptone Water acc. ISO 6579, ISO 21528, ISO 22964, FDA-BAM and EP, 5.7 g, irradiated | 1.02448.0060 | 60 bags    | 60 bags x 29 g<br>35 bags x 86 g                          |
| ReadyTube™ 9 BPW ISO 6579, 6887, 21528                                                                  | 1.46142.0020 | 20 x 9 ml  | 100 x 9 ml,<br>6 x 225 ml,<br>6 x 1000 ml,<br>1 x 2000 ml |
| Granucult™ MKTTn (MULLER-KAUFFMANN Tetrathionate Novobiocin) Broth (Base) acc. ISO 6579                 | 1.05878.0500 | 500 g      |                                                           |
| Potassium Iodide                                                                                        | 1.05043.0250 | 250 g      |                                                           |
| Iodine resublimed                                                                                       | 1.04761.0100 | 100 g      |                                                           |

| Product                                                                      | Cat. No.     | Pack size   | Other pack sizes available |
|------------------------------------------------------------------------------|--------------|-------------|----------------------------|
| MSRV (Modified Semi-solid RAPPAPORT-VASSILIADIS) Medium (Base) acc. ISO 6579 | 1.09878.0500 | 500g        |                            |
| MSRV Selective Supplement                                                    | 1.09874.0010 | 10 x 1 vial |                            |
| ReadyTube™ 12 MSRV Medium ISO 6579                                           | 1.46694.0100 | 100 x 12 ml |                            |
| Granucult™ XLD (Xylose Lysine Deoxycholate) Agar acc. ISO 6579               | 1.05287.0500 | 500 g       |                            |
| ReadyPlate™ XLD Agar ISO 6579                                                | 1.46751.0020 | 20 x 90 mm  |                            |
| RAMBACH® Agar                                                                | 1.07500.0001 | 4 x 250 ml  | 4 x 1000 ml,<br>4 x 50 l   |
| RAMBACH® Agar ready-to-use                                                   | 1.46719.0020 | 20 x 90 mm  | 100 x 90 mm                |
| Singlepath® Salmonella                                                       | 1.04140.0001 | 25 test     |                            |
| Bismuth Sulfite Agar acc. WILSON-BLAIR                                       | 1.05418.0500 | 500 g       |                            |
| Triple Sugar Iron Agar                                                       | 1.03915.0500 | 500 g       |                            |
| Urea Agar (Base) acc. CHRISTIANSEN                                           | 1.08492.0500 | 500 g       |                            |
| Urea GR for Analysis ACS, Reagent Ph Eur                                     | 1.08487.0500 | 500 g       |                            |
| MR-VP (Methyl Red-VOGES-PROSKAUER) Broth                                     | 1.05712.0500 | 500 g       |                            |
| KOVACS' Indole Reagent                                                       | 1.09293.0100 | 100 ml      |                            |

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