

## MSRV/Agar

(Semi-solid Rappaport Vassiliadis medium)

355-6139  
356-4325  
356-4610

### DEFINITION

MSRV is a semi-solid medium for the isolation of *Salmonella*.

### STANDARDS

#### FOOD MICROBIOLOGY

- **NF ISO 6579/A1 (February 2006):** Food microbiology - Horizontal method for detection of *Salmonella* spp.

### PRINCIPLE

The semi-solid medium gives better results than traditional techniques because it enables the migration of *Salmonella* to form clear opaque halos of growth originating from the place of inoculation.

Other strains are inhibited by the magnesium chloride, malachite green, and novobiocin, which are selective agents, and by the incubation temperature of 42°C.

### PRESENTATION

- **Dehydrated**  
500 g code 356-4325
- **Novobiocin selective supplement**  
1g code 356-4610  
(1 vial q.s.p. 100 l base)
- **Ready-to-use**  
200 ml x 6 code 355-6139

### STORAGE

- Ready-to-use and supplement: + 2°C to 8°C.
- Dehydrated: +15°C-25°C, in carefully-sealed bottles in a cool, dry place
- Expiration date and batch number are shown on the package.

### THEORETICAL FORMULA

|                                |          |
|--------------------------------|----------|
| Tryptone                       | 4.6 g    |
| Acid hydrolysed casein         | 4.6 g    |
| Sodium chloride                | 7.3 g    |
| Potassium dihydrogen phosphate | 1.5 g    |
| Anhydrous magnesium chloride   | 10.9 g   |
| Malachite green oxalate        | 0.037 g  |
| Novobiocin                     | 0.010 g  |
| Agar                           | 2.7 g    |
| Distilled water                | 1,000 ml |

Final pH (25°C) = 5.2 ± 0.2

### OTHER PRODUCTS REQUIRED (NOT SUPPLIED)

- Distilled water

### EQUIPMENT REQUIRED (NOT SUPPLIED)

(non-exhaustive)

- Scales
- Sterile weighing bags
- Grinder
- Hotplate
- Mixer-homogenizer
- Sterile Petri dishes (Ø= 90 mm)
- Sterile pipettes (code 355-0751) or inoculating loops
- Water-bath precise to ± 1°C
- Thermostatically-controlled incubator or room, precise to ± 1°C
- All usual laboratory equipment

### PREPARATION OF DEHYDRATED MEDIUM

**Always shake well before use**

#### • Dehydrated base

Dissolve 31.5 g of powder in 1 l of distilled water. Soak for 10 minutes, swirl to mix and bring to the boil. Cool to 47°C.

#### • Freeze-dried supplement

Under aseptic conditions, reconstitute the Novobiocin selective supplement adding 0.01 g of Novobiocin with 5 ml of sterile water.

#### • Complete medium

Add 5 ml of reconstituted selective supplement to 1 liter of base medium. Mix thoroughly before dispensing.

**Reconstitution ratio: 31.5 g/l**

**500 g of powder makes 15.9 liters of MSRV.**

### PROTOCOL

#### • Preparation of samples

According to the standards applicable to the product concerned.

#### • Pre-enrichment

According to the standards applicable to the product concerned.

#### • Inoculation and incubation

Rapidly pour about 18 ml of melted medium (1 to 2 minutes in the water-bath, no more). Transfer 3 drops (i.e. a total of about 0.15 ml) of culture obtained after enrichment to a dish of MSRV, if necessary spread on 3 points of the medium's surface. Incubate at 42°C ± 1°C for 20 h - 24 h (or possibly 48 h).

**NEVER EXCEED 43°C.**

## READING AND INTERPRETATION

Systematically isolate on appropriate media; Hektoen (codes 356-4284, 355-4386 and 356-3894), XLD (codes 356-9124, 354-1751), XLT4 (code 356-3654) or Brilliant Green Agar (Kristensen) (code 356-4464).

## PRECAUTIONS

- Comply with Good Laboratory Practice.
- MSRV medium in ready-to-use form, avoid heating for a prolonged period. In general, 20 minutes to obtain a homogeneous liquid agar are sufficient.
- Keep up agar plates for a period of 2 weeks maximum at 5°C +/- 3 °C in the dark.
- Do not use plates with agar liquefied or fragmented.

## PERFORMANCES / QUALITY CONTROL OF THE TEST

The growth performances of the media are verified with the following strains:

| STRAINS                                      | Enrichment after 24 h incubation at 41.5°C |
|--|--|
| <i>Salmonella typhimurium</i><br>ATCC 14028  | +  |
| <i>Salmonella Enteritidis</i><br>ATCC 13076  | +  |
| <i>Escherichia coli</i><br>ATCC 25922        | -  |
| <i>Enterococcus faecalis</i><br>ATCC 29212   | < 10 colonies                              |
| <i>Pseudomonas aeruginosa</i><br>ATCC 27853b | +  |

## QUALITY CONTROL OF MANUFACTURER

Every product manufactured and marketed by Bio-Rad is subject to a quality-assurance procedure at all stages, from the reception of raw materials to the marketing of the end-product. Each batch of finished product undergoes quality control and is marketed only if it satisfies the acceptability criteria.

Documentation relative to the production and control of each batch is kept on file.

## KEY WORDS

MSRV / *Salmonella* / Food products / Enrichment / Detection / Novobiocin / Medium.

## BIBLIOGRAPHY

**DE SMEDT ET AL. (1986):** Rapid *Salmonella* Detection in Foods by Motility Enrichment on a Modified Semi-solid Rappaport Vassiliadis Medium. - J. Food Protect. Vol 49, 7; 510-514