

MRS Agar Low pH ISO

Cat. 1433

Recommended medium for the growth of lactobacilli in general.

Practical information

| Applications | Categories |
|-----------------------|--------------|
| Selective enumeration | Lactobacilli |

Industry: Food / Alcoholic beverages / Dairy products

Regulations: ISO 11133 / ISO 15214



Principles and uses

MRS Agar Low pH is a selective medium that supports the good growth of lactobacilli in general.

The medium is apt for the growth of lactic acid bacteria, including *Lactobacillus*, *Pediococcus* and *Leuconostoc*.

Ammonium citrate, at a low pH, inhibits most microorganisms, but allows the growth of lactobacilli. Dipotassium phosphate and sodium acetate are buffer agents to maintain a low pH. Tween 80 is an emulsifier. Manganese and magnesium sulfates are sources of ions and sulfate. Casein peptone and beef extract provide nitrogen, vitamins, minerals and amino acids essential for growth. Yeast extract is a source of vitamins, particularly of the B-group. Dextrose is the fermentable carbohydrate. Bacteriological agar is the solidifying agent.

The growth of some lactobacillus strains is inhibited at a pH higher than 6,0 and it is necessary to acidify the medium to favor the growth. With a pH of 5,7±0,1, this medium favors the growth of these strains.

Normative ISO 15214 recommends this medium for the enumeration of mesophilic lactic acid bacteria Colony count technique at 30 °C.

Formula in g/L

| | | | |
|----------------------------|----|---------------------------------|------|
| Enzymatic digest of casein | 10 | Glucose | 20 |
| Bacteriological agar | 12 | Magnesium sulfate heptahydrated | 0,2 |
| Sodium acetate | 5 | Tween 80 | 1,08 |
| Yeast extract | 4 | Dipotassium hydrogen phosphate | 2 |
| Triammonium citrate | 2 | Manganese sulfate tetrahydrate | 0,05 |
| Meat extract | 10 | | |

Preparation

Suspend 66 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Sterilize in autoclave at 121 °C for 12 minutes. Cool to 47 °C, mix well and dispense into plates.

Instructions for use

For the enumeration of mesophilic lactic acid bacteria according to ISO 15214:

- Prepare the initial sample and the serial dilutions.
- Transfer 1 ml of sample to each of two sterile Petri dishes. Repeat the process with the diluted sample.
- Pour 15 ml of MRS medium previously cooled to 47 °C on each Petri dish.
- Allow the plates to solidify and incubate in an inverted position at 30 °C for 72±3 hours. Avoid desiccation of the agar during the incubation so that the medium does not become too inhibitory.

*Surface plating in combination with incubation under anaerobic or microaerobic conditions can be applied instead of the pour-plating procedure.

Quality control

| Solubility | Appearance | Color of the dehydrated medium | Color of the prepared medium | Final pH (25°C) |
|------------|-------------|--------------------------------|------------------------------|-----------------|
| w/o rests | Fine powder | Beige | Amber, slightly opalescent | 5,7±0,1 |

Microbiological test

According to ISO 11133:

Incubation conditions: (30±1 °C / 72±3 h).

Inoculation conditions: Productivity quantitative (100±20. Min. 50 CFU) / Selectivity (10⁴-10⁶ CFU) / Specificity (10³-10⁴ CFU).

Reference media: Batch of MRS Medium already validated.

| Microorganisms | Specification | Characteristic reaction |
|---|----------------------|---|
| Bacillus cereus ATCC 11778 | Total inhibition (0) | |
| Lactobacillus sakei ATCC 15521 | Good growth (2) >70% | Characteristic colonies according to each species |
| Lactococcus lactis ssp. lactis ATCC 19435 | Good growth (2) >70% | Characteristic colonies according to each species |
| Escherichia coli ATCC 25922 | Total inhibition (0) | |

Storage

Temp. Min.:2 °C

Temp. Max.:8 °C

Bibliography

ISO 15214: Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of mesophilic lactic acid bacteria -- Colony-count technique.

ROGOSA, M., a. SHARPE, M.E.: An approach to the classification of the lactobacilli. " J. Appl. Bact., 22; 329-340 (1959).