MRS Agar | AS-1295

Used for the enrichment, isolation, and cultivation of *Lactobacillus* species.

De Man, Rogosa, and Sharpe created MRS Agar, a selective culture medium designed especially for the isolation and growth of lactic acid bacteria, especially *lactobacilli*. This media is commonly used in clinical microbiology, the dairy industry, and food microbiology. The *lactobacilli*'s growth is supported by the medium's carefully adjusted composition, which simultaneously suppresses the growth of competing bacteria.

Meat extract and casein peptone are vital supplies of carbon and nitrogen, while glucose is the main carbohydrate used in energy metabolism. To provide B vitamins, which are essential for *lactobacillus* growth, yeast extract is added. Fatty acids become more soluble when tween 80 is added, which makes it easier for these bacteria to use them. Diammonium hydrogen citrate and sodium acetate are added to prevent the growth of unwanted microbes. For several enzymatic processes in *lactobacilli*, magnesium and manganese ions—provided by magnesium sulfate and manganese sulfate—are necessary cofactors. These acid-tolerant species depend on a steady pH, which is maintained by the phosphate buffer system.

Since *lactobacilli* are usually microaerophilic, lower oxygen tension is frequently necessary for their optimum growth. MRS agar is frequently used as a pour plate, with a second layer of sterile MRS agar placed on top of the solidified base layer following inoculation, to produce microaerophilic conditions.

Composition (gr/L)

Peptone from Casein	10
Meat Extract	10
Yeast extract	4
D-Glucose	20
Dipotassium Hydrogen Phosphate	2
Tween® 80	1
Di-Ammonium Hydrogen Citrate	2
Sodium Acetate	5
Magnesium Sulphate	0.2
Manganese Sulphate	0.04
Agar	14
Final pH at 25°C	5.7 ± 0.2

Preparation

Dissolve 68.2 g of the powder into 1 litter distilled water. Autoclave at 121 °C for 15 minutes or 118°C to achieve growth of *Bifidobacterium* spp.

Quality Control

Dehydrated Appearance: Light Tan, free-flowing, homogeneous.

Prepared Appearance: Amber, very slightly to slightly opalescent.

Reaction of 6.8% Solution at 25°C: pH 5.7 ± 0.2

Microbial Test Results

Incubate at 35 °C for up to 3 days or incubate at 30 °C for up to 5 days.

Organism (ATCC)	Recovery
Lactobacillus acidophilus (4356)	≥ 50
Lactobacillus lactis (19435)	≥ 50
Bifidobacterium bifidum (11863)	≥ 50 (anaerobic incubation)
Bacillus cereus (11778)	No Growth
Escherichia coli (25922)	No Growth

Storage

Keep the container of dehydrated powder and prepared culture medium at 2 to 8 °C.