MRS Broth

Cat. 1215

For the cultivation and enumeration of Lactobacillus spp.

Practical information

Aplications	Categories
Selective enumeration	Lactobacilli
Selective enrichment	Lactobacilli

Industry: Food / Alcoholic beverages / Dairy products

Principles and uses

MRS Broth is a medium for the cultivation and enumeration of Lactobacillus spp. It has the same formulation as MRS Agar (Cat. 1043) without the agar as a solidifying agent. It is used when a fluid medium is preferred.

It was developed by De Man, Rogosa and Sharpe to provide a medium which allows a good growth of lactobacilli, particularly L. brevis and L. fermenti strains, which have had a poor growth in existing media. This has been achieved by replacing the tomato juice from the Tomato Juice Agar with other nutrients, creating a suitable medium 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. Bacteriological peptone and beef extract provide nitrogen, vitamins, minerals and amino acids essential for growth. Yeast extract is source of vitamins, particularly the B-group. Dextrose is the fermentable carbon and energy source.

The growth of some Lactobacillus strains are inhibited at pH higher than 6,0, so it is necessary to acidify the media to promote the growth. To acidify the media some drops of acetic acid can be added.

Formula in g/L

Bacteriological peptone	10	Dextrose	20
Dipotassium phosphate	2	Magnesium sulfate	0,2
Manganase sulfate	0,05	Beef extract	8
Sodium acetate	5	Tween 80	1
Yeast extract	4	Ammonium citrate	2

Typical formula g/L * Adjusted and/or supplemented as required to meet performance criteria.

Preparation

Suspend 52,25 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. Dispense into appropriate containers and sterilize in autoclave at 121 ºC for 12 minutes.

Instructions for use

- Take the inoculum with a sterile loop.
- Submrge the handle into the medium and shake gently.
- Incubate at 35 ºC for 3 days or at 30 ºC for 5 days, both cases in a CO2 enriched atmosphere.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	Beige	Clear amber	6,2±0,2

Microbiological test

Incubation conditions: (35 ºC / 3 days) or (30 ºC / 5 days) in a CO2 enriched atmosphere.

Microorganisms	Specification
Escherichia coli ATCC 25922	Good-moderate growth
Pseudomonas aeruginosa ATCC 27853	Inhibited growth
Lacticaseibacillus casei ATCC 393	Good growth
Lactobacillus acidophilus ATCC 4356	Good growth
Lactobacillus fermentum ATCC 9338	Good-moderate growth

Storage

Temp. Min.:2 ºC
Temp. Max.:8 ºC

Bibliography

Sharpe M. Elisabeth, Fryer T.F. and Smith D.G. (1966) “Identification of the Lactic Acid Bacteria in Identification Method for Microbiologist Part A” (Gibbs B.M. and Skinner F.A. eds.) London and New York, Academic Press.
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