MAN, ROGOSA AND SHARPE (MRS) AGAR

AGMR-00P-500

- **Principle**

MRS Agar is a selective medium, based on the formulation developed by de Man, Rogosa and Sharpe to provide a medium that would support the good growth of lactobacilli in general, but in particular of those strains which showed poor growth in existing media such as *L. brevis* and *L. fermenti*, replacing a variable product (tomato juice).

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 sulphates are sources of ions and sulphate. Bacteriological peptone and Beef extract provide nitrogen, vitamins, minerals and amino acids essential for growth. Yeast extract is a source of vitamins, particularly the B-group. Dextrose is the fermentable carbohydrate. Bacteriological agar is the solidifying agent.

Lactobacilli are microaerophilic and generally require layered plates for aerobic cultivation on solid media. Submerged or surface colonies may be compact or feathery, and are small, opaque and white.

- **Regulatory compliance**

This product is manufactured under a quality management system in accordance with ISO 9001 and ISO 13485, and its formulation and quality control comply with applicable international standards, such as ISO 11133, where relevant.

- **Composition**

Ingredients	**g/L**
Bacteriological agar	10.00
Dextrose	20.00
Magnesium sulphate	0.20
Beef extract	8.00
Tween 80	1.00
Ammonium citrate	2.00
Bacteriological peptone	10.00
Dipotassium phosphate	2.00
Manganese sulphate	0.05
Sodium acetate	5.00
Yeast extract	4.00

- **Preparation**

Suspend 62 grams of the medium in one litre 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 45-50 °C, mix well and dispense into plates.

- **Applications and use**

For the enumeration of mesophilic acid lactic bacteria:

- Pour 1 ml of the previously diluted sample into a sterile Petri dish.

- Add a first layer of the cooled medium (45-50 °C).

- After solidification, a second layer is poured.

- Incubate the plates up to 3 days at 35 °C or up to 5 days at 30 °C. If possible, incubate the plates in a CO_2 atmosphere.

- It is important to maintain a humid atmosphere because the plates should not dry out during incubation.

- The growth of some Lactobacillus strains is inhibited at a higher pH of 6.0 and it is necessary to acidify the media to promote growth. To acidify the media some drops of acetic acid can be added.

- **Quality control**

Solubility	w/o rests
Appearance	Fine powder
Colour of the dehydrated medium	Beige
Colour of the prepared medium	Amber, slightly opalescent
Final pH (25 °C)	7.2 ± 0.2

- **Microbiological test**

Microorganisms	ATCC	Specification
Lactobacillus sakei	15521	Good growth, >70%
Lactococcus lactis ssp. lactis	19435	Good growth, >70%
Escherichia coli	25922	Moderate growth

- **Storage**

The product is highly hygroscopic; keep the container always closed and store it properly as per the conditions mentioned on the label. The declared expiry is valid only when stored as per the conditions mentioned on the label. Temp. Min.:2 °C Temp. Max.:25 °C.

Note: Sterilize media immediately after reconstitution.

- **Bibliography**

Briggs M (1.953) "An Improved Medium for Lactobacilli" J. Dairy Res. 20. 36-40.

De Man, J.C. Rogosa, M., Sharpe, Elisabeth (1960) "A Medium for the Cultivation of Lactobacilli". J. Appl. Bact. 23. 130-135

- **Product use limitation**

This product is developed, designed and supplied exclusively for research use only. It is not intended for diagnostic applications or drug development, and it is not suitable for administration to humans or animals.