MRS AGAR

INTENDED USE
Remel MRS Agar (Man, Rogosa, Sharpe) is a solid medium recommended for use in qualitative procedures for isolation of *Lactobacillus* species and gram-positive cocci.

SUMMARY AND EXPLANATION
Tomato Juice Agar was developed in the 1950s to isolate *Lactobacillus* from food products. Rogosa et al. formulated a medium for recovery of lactobacilli from oral and fecal specimens; however, it was inadequate for isolation of certain *Lactobacillus* spp. from dairy products.[1] In 1960, De Man, Rogosa, and Sharpe modified the Rogosa formulation by eliminating tomato juice and created a medium which supported the growth of slower-growing lactobacilli.[2] Recently MRS Agar has been used in the clinical laboratory to differentiate certain strains of gram-positive cocci and lactobacilli.[3-6]

PRINCIPLE
Gelatin peptone and beef extract provide essential nutrients and amino acids necessary for bacterial growth. Yeast extract is a growth enhancer and dextrose provides an energy source. Dipotassium phosphate supplies essential electrolytes and maintains osmotic equilibrium. Polysorbate 80 supplies fatty acids required for the metabolism of lactobacilli. Ammonium citrate and sodium acetate inhibit the growth of commensal microbial flora, gram-negative bacilli, and fungi, and improve the growth of lactobacilli.

REAGENTS (CLASSICAL FORMULA)*

Dextrose	20.0 g	Dipotassium Phosphate	2.0 g
Beef Extract	10.0 g	Polysorbate 80	1.0 g
Gelatin Peptone	10.0 g	Magnesium Sulfate	0.1 g
Sodium Acetate	5.0 g	Manganese Sulfate	0.05 g
Yeast Extract	5.0 g	Agar	15.0 g
Ammonium Citrate	2.0 g	Demineralized Water	1000.0 ml

pH 6.2 ± 0.2 @ 25°C

*Adjusted as required to meet performance standards.

PREPARATION OF DEHYDRATED CULTURE MEDIUM
1. Suspend 62 g of medium in 1000 ml of demineralized water.
2. Heat to boiling with agitation to completely dissolve.
3. Sterilize by autoclaving at 121°C for 15 minutes or following established laboratory procedures.
4. Dispense into appropriate containers.

PROCEDURE
1. Consult current editions of appropriate references for the recommended procedure for sample preparation, inoculation, and testing.[7,8]
2. To cultivate gram-positive cocci such as *Leuconostoc* or *Pediococcus* and to grow *Lactobacillus*, inoculate sample aliquot onto MRS Agar and streak for isolation.
3. Alternatively, *Lactobacillus* species may be cultured by pouring cooled MRS Agar over a homogenized aliquot of sample, at an appropriate dilution, into a sterile petri dish; mix thoroughly.
4. Incubate anaerobically or in 5-10% CO_2 for 3-5 days at 33-37°C. Incubation conditions may vary if psychrophilic, mesophilic, or thermophilic bacteria are being cultured.
5. Examine the plate for growth. Definitive identification of *Lactobacillus* and certain gram-positive cocci requires additional biochemical tests. Consult appropriate references for further instructions.[9]

QUALITY CONTROL
All lot numbers of MRS Agar have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

CONTROL	INCUBATION	RESULTS
Lactobacillus johnsonii ATCC® 33200	Anaerobic, up to 72 h @ 33-37°C	Growth

BIBLIOGRAPHY

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Refer to the front of Remel *Technical Manual of Microbiological Media* for **General Information** regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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