



Modified Columbia Agar (MCA) Plate Product Insert

Intended Use

Modified Columbia Agar (MCA) plates are a prepared, ready-to-use, selective medium intended for the in vitro isolation and cultivation of anaerobic bacteria of the genus *Bifidobacterium* from clinical and non-clinical materials. Growth of *Bifidobacterium* spp. on MCA plates requires anaerobic incubation in a bag, jar, or chamber.

Intended Users

For use by trained laboratory personnel in clinical, reference, research, industrial, pharmaceutical, and veterinary microbiology settings.

Summary and Explanation

Columbia Broth is a medium for isolating and cultivating fastidious microorganisms (9). The MCA medium is modified by the addition of propionic acid and by pH adjustment to selectively isolate and grow *Bifidobacterium* spp. (8). The medium may be used to quantify *Bifidobacterium* from human feces (5) and as an indicator of fecal contamination of meat (6), milk and cheese (3), and beef and pork (2) products. *Bifidobacterium* spp. are more specific and sensitive indicators of fecal contamination than *Escherichia coli* because they are present in higher numbers in the gut and do not grow readily outside the gut environment without anaerobic conditions (2). Infections caused by *Bifidobacterium* spp. are extremely rare in humans (4). *Bifidobacterium* spp. are reported to be beneficial to human health, and their absence from the large intestine has been used as an indicator of an unhealthy state (7). These findings have resulted in *Bifidobacterium* being used as a probiotic (1).

Principles of the Procedure

Propionic acid and the reduced initial pH of the medium suppress the growth of accompanying flora while permitting the growth of *Bifidobacterium* spp. Columbia Broth, glucose, and DL-lactic acid supply the nitrogen, carbohydrate, and growth factors required by these organisms.

Reagents

Media formulation (approximate, per liter of deionized water). Initial pH: 5.25 – 5.55.

Component	Amount
Columbia Broth	35.0 g
Glucose	14.0 g
Powdered Agar	15.0 g
DL-Lactic Acid	9.4 g
Propionic Acid	5.0 mL
Deionized water	to final volume

This formula is typical. Production lots may be adjusted to offset variances in raw materials in order to meet performance criteria.

Warnings and Precautions

- For In Vitro Diagnostic Use.
- MCA plates are packaged aseptically and must be handled aseptically to maintain sterility during use.
- Specimens and used culture plates may contain infectious agents; observe standard (universal) biohazard precautions when handling.
- Dispose of used plates as biohazardous waste; sterilize before disposal in accordance with applicable regulations.
- This product contains material of animal origin. Source animals are documented to be free of BSE/TSE.
- A Safety Data Sheet (SDS) is available on our website.

Storage and Handling

- MCA plates will arrive at room temperature.
- Store the product at 2°C to 8°C.
- The expiration date is 4 months from the date of manufacture; refer to the plate/label for the actual expiration date.

Specimen Collection and Handling

Collect, transport, and process specimens using standard techniques for the recovery of anaerobic bacteria. Prompt processing and protection of specimens from oxygen exposure maximize anaerobe recovery. Consult appropriate references for specimen selection, collection, transport, and storage.

Materials Required But Not Provided

Anaerobic bag, jar, or chamber with an appropriate oxygen-removal system; an anaerobic indicator (such as OxyBlue™); inoculating loops or swabs; an incubator capable of 35–37°C; and additional media, reagents, and equipment for Gram stain, subculture, and identification, as required.

Directions for Use

1. Before use, allow MCA plates to warm to room temperature.
2. Remove the plate from the protective pouch.
3. Examine the plate for contamination, evidence of oxidation or discoloration, and the expiration date.
4. Inoculate and streak the plate using standard technique.
5. After inoculation is complete, invert the plate and incubate at 35–37°C in an anaerobic bag, jar, or chamber to maintain an anaerobic environment.
6. Use an appropriate indicator (such as OxyBlue™) inside the anaerobic bag, jar, or chamber to test and confirm anaerobiosis.
7. Examine the plate for growth after 2 to 3 days of incubation.

Quality Control

Oxyrase, Inc. certifies that samples of each lot were quality control tested and performed acceptably to Oxyrase, Inc. specifications, which incorporate CLSI M22-A3. The following tests were confirmed:

Organism	ATCC No.	Result
<i>B. fragilis</i>	25285	No growth in 2-3 days
<i>B. adolescentis</i>	15703	Growth in 2-3 days
<i>E. coli</i>	25922	No growth in 2-3 days

Physical appearance: uninoculated medium is pale yellow with no surface imperfections.

Each laboratory should establish its own quality control program in accordance with applicable accreditation and regulatory requirements. The organisms listed above are recommended for user quality control.

Results and Interpretation

Examine the plates for growth following incubation. Colony morphology provides presumptive information and should be interpreted together with other laboratory findings. Confirm isolates by additional identification procedures.

Limitations of the Procedure

- Plates may only allow for growth of select organisms. Additional testing may be required to identify the various colony types grown.

Product Guarantee

Oxyrase, Inc. guarantees a 28-day shelf life from the shipment date; arrange a longer shelf life at the time the order is placed. If MCA plates arrive with less than a 28-day shelf life, are contaminated or oxidized, or fail when used as specified, Oxyrase, Inc. will refund the purchase price. To request a refund, contact Oxyrase, Inc. with the lot number printed on the plate; return of the product may be required for investigation. Oxyrase, Inc. welcomes questions regarding this product and its applications.

Bibliography

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Key to Symbols

Symbol	Meaning
IVD	For in vitro diagnostic use
REF	Catalog number
LOT	Batch code / lot number
⌘ (hourglass)	Use-by / expiration date
2–8°C	Temperature limit (store at 2°C to 8°C)
⏏ (factory)	Manufacturer
① (book)	Consult instructions for use

Products

Catalog No. (REF): MCA-10

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