



m-CCDA

- For in vitro use only -

Catalogue No. PC25

Our Modified Charcoal Cefoperazone Deoxycholate Agar (m-CCDA) is a selective medium used for the isolation of *Campylobacter* species from a variety of samples.

Campylobacter species have been recognized as agents of gastrointestinal infection since the late 1970s. m-CCDA medium is based on a formulation originally devised by Bolton et al. which was developed to replace blood with charcoal, ferrous sulfate and sodium pyruvate. The selective agent in the original formulation was cefazolin which was later replaced with cefoperazone which demonstrated improved selectivity for the medium. The addition of rifampicin was found to be very effective in suppressing gram-positive bacteria, while amphotericin B helped to inhibit yeast and molds that were part of the background flora. Our m-CCDA medium is described in the FDA BAM and is one of two specified agars that can be used for the selective isolation of *Campylobacter* following enrichment.

Formula per Litre of Medium

Nutrient Broth No.2	25.0 g
Bacteriological Charcoal	4.0 g
Casein hydrolysate	3.0 g
Yeast Extract	2.0 g
Sodium Deoxycholate	1.0 g
Ferrous Sulfate	0.25 g
Sodium Pyruvate	0.25 g
Agar	12.0 g
Cefoperazone	32.0 mg
Amphotericin	2.0 mg
Rifampicin	10.0 mg

pH 7.4 ± 0.2

Recommended Procedure

1. Allow medium to adjust to room temperature prior to inoculation.
2. Using a direct inoculum from the specimen, perform a four-quadrant streak to obtain well-isolated colonies. Alternatively, as prescribed in the FDA BAM, streak both a diluted (1:100 in 0.1% peptone water) and undiluted aliquot of the enrichment broth on separate m-CCDA plates.
3. Incubate at 42°C under microaerophilic conditions (reduced oxygen and increased carbon dioxide).
4. Examine plates after 24 and 48 hours for typical colonies.

Interpretation of Results

The colonial morphologies of campylobacters can be used as a guideline from identification to the species level. *Campylobacter jejuni* will typically appear as gray, moist spreading colonies. Some strains may exhibit a green hue or metallic sheen. *Campylobacter coli* strains tend to be creamy-grey in color, moist, slightly raised and often produce discrete colonies.

Additional biochemical and serological test should be performed on isolated colonies from pure culture in order to complete identification.

- *Campylobacter colonies may swarm when initially isolated from clinical specimens*

Quality Control

After checking for correct pH, colour, depth, and sterility, the following organisms are used to determine the growth performance of the completed medium.

Organism	Expected Result
<i>Campylobacter jejuni</i> ATCC 33291	Growth
<i>Escherichia coli</i> ATCC 25922	Inhibition
<i>Candida albicans</i> ATCC 10231	Inhibition

Storage and Shelf Life

Our m-CCDA should be stored at 4 to 8°C and protected from light. The medium side should be uppermost to prevent excessive accumulation of moisture on the agar surface. Under these conditions the medium has a shelf life of 6 weeks from the date of manufacture.

References

1. Bolton FJ, Hutchinson DN, Coates D. J Clin Microbiol 1984; 19:169-71.
2. Hutchinson DN, Bolton FJ. J Clin Path 1984; 34:956-7.
3. Bolton FJ, Hutchinson DN, Parker G. Eur J Clin Microbiol Infect Dis 1988; 7:55-60.
4. MAFF Validated methods for the analysis of foodstuffs: method for the detection of thermotolerant *Campylobacter* in foods. J Assoc Publ Analysts 1993; 29:253-62.
5. U.S. Food and Drug Administration. (2013, April 10). BAM Media M30a: Modified *Campylobacter* Blood-Free Selective Agar Base. <http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm064002.htm>

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