CVA MEDIUM

INTENDED USE
Remel CVA Medium is a solid medium recommended for use in qualitative procedures for the primary isolation and cultivation of *Campylobacter* species from fecal specimens.

SUMMARY AND EXPLANATION
Campylobacter is a major cause of diarrheal disease in adults and children and is usually associated with unsanitary preparation of food.[1] Outbreaks have also been linked with contaminated drinking water. *Campylobacter* has worldwide distribution in both developed and undeveloped countries and is ubiquitous in domestic pets and food animals (e.g., poultry, cattle, sheep, and pigs).[2] In 1978, Blaser et al. reported success in isolating *Campylobacter jejuni* with media containing a Brucella Agar base supplemented with antibiotics and sheep blood.[3,4] Reller et al. developed CVA Medium which is more effective in suppressing fecal flora, especially *Pseudomonas*, due to the cefoperazone incorporated in the medium.[5]

PRINCIPLE
This medium contains casein and meat peptones which supply nitrogenous substances, carbon, and sulfur. Dextrose is an energy source and yeast extract supplies B vitamins, which are necessary for the growth of *Campylobacter* spp. Sheep blood supplies the X factor (heme) and other growth factors. The antibiotics in CVA Medium include amphotericin B to inhibit fungi, vancomycin to inhibit gram-positive organisms, and cefoperazone to inhibit many aerobic and anaerobic gram-positive and gram-negative organisms.

REAGENTS (CLASSICAL FORMULA)*

Casein Peptone	15.0 g	Cefoperazone	20.0 mg
Meat Peptone	5.0 g	Vancomycin	10.0 mg
Sodium Chloride	5.0 g	Amphotericin B	2.0 mg
Yeast Extract	2.0 g	Sheep Blood	5 %
Dextrose	1.0 g	Agar	15.0 g
Sodium Bisulfite	0.1 g	Demineralized Water	1000.0 ml

pH 7.0 ± 0.2 @ 25°C (Prior to terminal sterilization)

*Adjusted as required to meet performance standards.

PROCEDURE
Note: Specimens for isolation of *Campylobacter* spp. should be placed in transport medium when a delay in processing of more than 2 hours is anticipated or when a rectal swab is collected. Optimal recovery of *Campylobacter* spp. from stool specimens may be achieved by using a combination of selective media.[1]

1. Inoculate and streak the specimen as soon as possible after it is received in the laboratory. Rectal swabs and liquid stools can be inoculated directly onto CVA Medium. Formed stool specimens should be emulsified in sterile saline (0.85%) prior to inoculation. Place 1 or 2 drops of liquid or formed stool suspension onto agar and streak for isolation.
2. Incubate Campylobacter Selective Agar in a microaerophilic environment (mixture of 5% O_2, 10% CO_2, and 85% N_2) at 42°C for 48-72 hours. Media may be set in duplicate and incubated at 33-37°C, as well as 42°C, to allow for the growth of certain *Campylobacter* spp.
3. Observe for characteristic colonies, which can be flat, irregular, or spreading on fresh medium. Some strains appear as a thin film on the agar or form colonies that tail along the line of streaking. On less fresh media, colonies are 1 to 2 mm in diameter, round, convex, and glistening. Colonies can be yellowish to gray or pinkish in color and are nonhemolytic.

QUALITY CONTROL
All lot numbers of CVA Medium have been tested using the following quality control organisms and have been found to be acceptable. This quality control testing meets or exceeds CLSI standards.[6] 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
**Campylobacter jejuni* ATCC® 33291	Microaerophilic, 48-72 h @ 40-42°C	Growth
Candida albicans ATCC® 10231	Aerobic, 18-24 h @ 33-37°C	Inhibition (partial to complete)
**Escherichia coli* ATCC® 25922	Aerobic, 18-24 h @ 33-37°C	Inhibition (partial to complete)
Proteus mirabilis ATCC® 12453	Aerobic, 18-24 h @ 33-37°C	Inhibition (partial to complete)
Pseudomonas aeruginosa ATCC® 27853	Aerobic, 18-24 h @ 33-37°C	Inhibition (partial to complete)
Staphylococcus aureus ATCC® 25923	Aerobic, 18-24 h @ 33-37°C	Inhibition (partial to complete)

*CLSI recommended organism

LIMITATIONS
1. Some *Campylobacter* spp. are inhibited by cephalosporins, including *Campylobacter fetus, Campylobacter upsaliensis, Campylobacter hyointestinalis,* and *Campylobacter lari.*[1,7]
2. Some *Campylobacter* isolates may produce weakly positive oxidase reactions when grown on Campy Blood Agar due to the dextrose in the medium. Subculture such isolates to media without dextrose and repeat the oxidase test.[7]
3. Some breakthrough of enteric bacilli may occur in the areas of heavy inoculum but *Campylobacter* will be evident in the more isolated areas.[7]

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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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