BD™ Campylobacter Agar (Butzler) • BD™ Campylobacter Agar (Skirrow)

INTENDED USE

BD Campylobacter Agar (Butzler) and **BD Campylobacter Agar (Skirrow)** are selective media for the isolation of *Campylobacter* species from clinical specimens.

PRINCIPLES AND EXPLANATION OF THE PROCEDURE

Microbiological method.

The genus *Campylobacter* includes important pathogens causing intestinal infections such as diarrhoea. In rural areas and in less developed countries, campylobacters are at least as frequent as *Salmonella* as intestinal pathogens. The most frequently isolated species is *Campylobacter jejuni* subsp*. jejuni*, whereas *C. coli* and *C. lari* are rarer.[1]

Dekeyser et al. reported the isolation of *C. jejuni* from the feces of patients with diarrhea and acute gastroenteritis using a filtration technique and a selective medium with antimicrobics to suppress the normal enteric flora.[2] Butzler, in 1973, developed a selective medium containing five antimicrobials.[3] Skirrow, in 1977, reported a selective culture medium containing three antimicrobics.[4]

In **BD Campylobacter Agar (Butzler)**, meat extract and peptone provide the nutrients, and sodium chloride maintains the osmotic stability. Novobiocin and colistin inhibit Gram negative enteric bacteria, cephazolin and bacitracin inhibit Gram positive bacteria. Cycloheximide inhibits many fungi. Horse blood provides nutrients and, by supplying catalase and superoxide dismutase, destroy radicals and peroxides accumulating during exposure to air.

In **BD Campylobacter Agar (Skirrow)**, heart infusion, casein peptone, and yeast extract provide nutrients, and sodium chloride maintains the osmotic stability. Vancomycin inhibits Gram positives, and trimethoprim and polymyxin B inhibit many Gram negative organisms. Lysed horse blood provides nutrients and heme for bacterial catalase.

REAGENTS

Formulas* Per Liter Purified Water

BD Campylobacter Agar (Butzler)		BD Campylobacter Agar (Skirrow)	
Meat Extract	10.0 g	Heart Muscle, Infusion from (solids)	2.0 g
Peptone	10.0	Pancreatic Digest of Casein	13.0
Sodium Chloride	5.0	Yeast Extract	5.0
Novobiocin	0.005	Sodium Chloride	5.0
Bacitracin	25000 I.U.	Vancomycin	0.01
Colistin	10000 I.U.	Trimethoprim	0.005
Cephazolin	0.015 g	Polymyxin B	2500 I.U.
Cycloheximide	0.05	Agar	15.0 g
Agar	12.0	Horse Blood, defibrinated, lysed	7%
Horse Blood, defibrinated	7%	pH 7.3 +/- 0.2	
pH 7.5 +/- 0.2			

*Adjusted and/or supplemented as required to meet performance criteria.

PRECAUTIONS

IVD . For professional use only.

Do not use plates if they show evidence of microbial contamination, discoloration, drying, cracking or other signs of deterioration.

Consult **GENERAL INSTRUCTIONS FOR USE** document for aseptic handling procedures, biohazards, and disposal of used product.

STORAGE AND SHELF LIFE

On receipt, store plates in the dark at 2 to 8° C, in their original sleeve wrapping until just prior to use. Avoid freezing and overheating. The plates may be inoculated up to the expiration date (see package label) and incubated for the recommended incubation times.
Plates from opened stacks of 10 plates can be used for one week when stored in a clean area at 2 to 8° C.

USER QUALITY CONTROL

Inoculate representative samples with the following strains (for details, see **GENERAL INSTRUCTIONS FOR USE** document). Incubate plates in a microaerobic atmosphere at 35 to 37° C for 42 to 48 hours.

Strains	BD Campylobacter Agar (Butzler)	BD Campylobacter Agar (Skirrow)
Campylobacter jejuni subsp. *jejuni* ATCC™ 33291	Growth good to excellent	Growth good to excellent
Campylobacter fetus DSM 5361	/	Growth good to excellent
Escherichia coli ATCC 25922	Inhibition complete	Inhibition complete
Proteus mirabilis ATCC 14153	Inhibition complete	Inhibition partial to complete
Enterococcus faecalis ATCC 29212	Inhibition complete	Inhibition complete

PROCEDURE

Materials Provided

BD Campylobacter Agar (Butzler) or **BD Campylobacter Agar (Skirrow)**, both provided in 90 mm **Stacker™** plates. Microbiologically controlled.

Materials Not Provided

Ancillary culture media, reagents and laboratory equipment as required.

Specimen Types

Fresh stool specimens or rectal swabs from patients suspected to be infected with *Campylobacter* species, or meat and other food samples (see also **PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE**). Stool specimens, swabs, and food samples should not be older than 24 to 48 hours. Swabs must be inserted into appropriate transport media (e.g., Cary Blair medium).[1] If not processed immediately, store specimens in transport media at 4 to 8° C. Avoid desiccation and exposure to oxygen.

Test Procedure

Streak the specimen for dilution as soon as possible after it is received in the laboratory onto **BD Campylobacter Agar (Butzler)** or **BD Campylobacter Agar (Skirrow)**. Meat or other foods should first be minced or homogenized and then inoculated directly or after suspension in a small amount of peptone broth onto the medium.
If material is being cultured directly from a swab, roll the swab over a small area of the surface at the edge; then streak from this inoculated area. The application of a special filtration technique for the processing of specimens followed by the inoculation of selective and non-selective media has been described.[1,5]
Incubate inoculated plates, protected from light, at 35 ± 2° C or 42 ±2° C in a reduced oxygen, increased carbon dioxide (=microaerobic) atmosphere. The incubation at 42° C results in better selectivity, but is inhibitory to *Campylobacter jejuni subsp. doylei* and a variety of other species. The microaerobic atmosphere can be achieved by using **BD CampyPak** (together with catalyst) or **CampyPak Plus** disposable gas generator envelopes in **BD GasPak** jars, or using a **BD CampyPouch™** system. Alternatively, the atmosphere can be achieved using evacuation of **BD GasPak** vented jars and replacement with cylinder gases. An incubation period of 2 to 3 days is usually sufficient, but 5 to 7 days of incubation were shown to increase the isolation rates.[1,5]

Results
After 42 to 48 hours incubation in a microaerobic atmosphere, the plates are inspected for typical *Campylobacter* colonies. Fresh isolates, especially of *C. jejuni*, tend to swarm on these and other campylobacter media while other species might produce convex colonies. A positive oxidase test and a Gram stain showing curved to gull wing-shaped Gram negative rods are further hints for the successful isolation. Further tests are necessary for confirmation of the identification.[1]

PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE

BD Campylobacter Agar (Butzler) and **BD Campylobacter Agar (Skirrow)** are media for the isolation of *Campylobacter* species from human stool specimens.[1,5,6]
Due to the presence of cephazolin, growth of certain *C. fetus* subsp. *fetus* strains and other campylobacters sensitive to first generation cephalosporins might be inhibited on **BD Campylobacter Agar (Butzler)**. It is recommended to include less selective media such as **BD Campylobacter Bloodfree Selective Medium**. Refer to the references for a full discussion of the isolation techniques.[1,5]
Cycloheximide in **BD Campylobacter Agar (Butzler)** does not inhibit most *Candida* species. Also, fungi are not inhibited on **BD Campylobacter Agar (Skirrow)**.

REFERENCES

1. Nachamkin, I. 2003. *Campylobacter* and *Arcobacter*. *In:* Murray, P. R., E. J. Baron, J.H. Jorgensen, M. A. Pfaller, and R. H. Yolken (ed.). Manual of clinical microbiology, 8th ed. American Society for Microbiology, Washington, D.C.
2. Dekeyser, P., M. Gossuin-Detrain, J.P. Butzler, and J. Sternon. 1972. Acute enteritis due to related *Vibrio*: first positive stool cultures. J. Infect. Dis. *125*:390-392.
3. Butzler, J.P. et al. 1973. Related vibrios in stool. J. Pediatr. 82: 493.
4. Skirrow, M.B. 1977. Campylobacter enteritis: a "new" disease. Br. Med. J. *2*:9-11.
5. Engberg, J. et al. 2000. Prevalence of *Campylobacter, Arcobacter, Helicobacter*, and *Sutterella* spp. in human fecal samples as estimated by a reevaluation of isolation methods for campylobacters. J. Clin. Microbiol. 38: 286-291.
6. Atlas, R.M. 1993. Handbook of microbiological media. CRC Press, Boca Raton, FL. USA.

PACKAGING/AVAILABILITY

BD Campylobacter Agar (Butzler)
Cat. No. 256058 Ready-to-use Plated Media, cpu 20

BD Campylobacter Agar (Skirrow)
Cat. No. 254464 Ready-to-use Plated Media, cpu 20

FURTHER INFORMATION

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