

Campylobacter Selective Supplement (Blaser-Wang)

PRODUCT INFORMATION

V001-250mg - Vancomycin HCl, Powder, 250mg

V001-1g - Vancomycin HCl, Powder, 1g

V001-5g - Vancomycin HCl, Powder, 5g

P007-1MU - Polymyxin B Sulfate, Powder, 1MU

P007-10MU - Polymyxin B Sulfate, Powder, 10MU

P007-100MU - Polymyxin B Sulfate, Powder, 100MU

T011-5g - Trimethoprim, Powder, 5g

T011-25g - Trimethoprim, Powder, 25g

T011-100g - Trimethoprim, Powder, 100g

A007-100mg - Amphotericin B, Powder, 100mg

A007-250mg - Amphotericin B, Powder, 250mg

A007-1g - Amphotericin B, Powder, 1g

A007-5g - Amphotericin B, Powder, 5g

C026-250mg - Cephalothin Sodium, Powder, 250mg

C026-1g - Cephalothin Sodium, Powder, 1g

DESCRIPTION

Columbia Blood Agar Base with Campylobacter Selective Supplement (Blaser-Wang) is a selective medium for the isolation of *Campylobacter* species at 42°C, which can inhibit the growth of *Candida albicans*.

BACKGROUND

Vancomycin is a glycopeptide antibiotic used in the prophylaxis and treatment of infections caused by Gram-positive bacteria.

Polymyxin B is an antibiotic primarily used for resistant gram-negative infections. It is derived from the bacterium *Bacillus polymyxa*. Polymyxin B is a mixture of two closely related compounds, polymyxin B1 and

polymyxin B2. It has a bactericidal action against almost all gram-negative bacilli except the Proteus group.

Trimethoprim is a bacteriostatic antibiotic which belongs to the class of chemotherapeutic agents known as dihydrofolate reductase inhibitors.

Amphotericin B is a polyene antifungal drug. Two amphotericins, amphotericin A and amphotericin B are known, but only B is used clinically, because it is significantly more active in vivo.

Cephalothin is a first-generation cephalosporin antibiotic. It is an intravenously administered agent with a similar antimicrobial spectrum to cefazolin and the oral agent cefalexin.

Mechanism of action

Vancomycin acts by inhibiting proper cell wall synthesis in Gram-positive bacteria. Due to the different mechanism by which Gram-negative bacteria produce their cell walls and the various factors related to entering the outer membrane of Gram-negative organisms, vancomycin is not active against Gram-negative bacteria (except some non-gonococcal species of *Neisseria*).

Polymyxins bind to the cell membrane and alter its structure, making it more permeable. The resulting water uptake leads to cell death.

Trimethoprim acts by interfering with the action of bacterial dihydrofolate reductase, inhibiting synthesis of tetrahydrofolic acid. Tetrahydrofolic acid is an essential precursor in the de novo synthesis of the intermediate Thymidine monophosphate (dTMP), precursor of DNA metabolite Thymidine triphosphate. Bacteria are unable to take up folic acid from the environment (i.e. the infection host) and are thus dependent on their own de novo synthesis. Inhibition of the enzyme starves the bacteria of nucleotides necessary for DNA replication causing, in certain circumstances, cell lethality due to thymineless death.

As with other polyene antifungals, amphotericin B associates with ergosterol, the main component of fungal cell membranes, forming a transmembrane channel that leads to monovalent ion (K⁺, Na⁺, H⁺ and Cl⁻) leakage, which is the primary effect leading to fungal cell death.

APPLICATION IN COLUMBIA

BLOOD AGAR BASE

Campylobacter Selective Supplement (Blaser-Wang) is based on the formulation of Skirrow, but with the addition of amphotericin B and cephalothin.

The inclusion of amphotericin B inhibits the growth of *Candida albicans* and cephalothin improves the selectivity of the supplement.

Content concentrations

Typical Formula*	mg/litre
Columbia Blood Agar Base	
Special peptone	23
Starch	1
Sodium chloride	5
Agar	10
Final pH 7.3 ± 0.2 @ 25°C	
Campylobacter Selective Supplement (Blaser-Wang)	
Vancomycin	10
Polymyxin B	2,500 IU
Trimethoprim	5
Amphotericin B	2
Cephalothin	15
* Adjusted as required to meet performance standards	

Table 1 typical formula for Columbia Blood Agar Base and Campylobacter Selective Supplement (Blaser-Wang)

METHOD

Preparation

Add appropriate amount of Columbia blood agar base to distilled water. Boil to dissolve and sterilise by autoclaving at 121°C for 15 minutes. Aseptically add supplements reconstituted as directed. Mix gently and pour into sterile Petri dishes.

Protocol

1. Prepare Campylobacter Selective Supplement (Blaser-Wang) plates as described in the preparation for use.
2. Emulsify approximately 0.5 g of the specimen in 5 ml of sterile 0.1% peptone water to form a 1:10 dilution.
3. Inoculate on to selective medium with cotton tipped swabs so that single isolated colonies are formed.
4. Incubate the plates in an atmosphere consisting of approximately 5-6% oxygen, 10% carbon dioxide and 84-85% nitrogen for 48 hours at 42°C.
5. Examine the plates and confirm the typical colonies as *Campylobacter* species.

Quality control

Positive control:

Campylobacter jejuni ATCC® 33291: Good growth; grey brown coloured colonies

Negative control:

Escherichia coli ATCC® 25922: Inhibited

REFERENCES

1. Skirrow M.B. (1977) BMJ 2. 9-11.
2. Blaser M.J., Hardesty H.L., Powers B. and Wang W.L.L. (1980) J. Clin. Micro. 11. 309-313.