

# BURKHOLDERIA CEPACIA SELECTIVE AGAR (BCSA)

- For in vitro use only -

Catalogue No. PB95

Our Burkholderia Cepacia Selective Agar (BSCA) is used for the selective isolation of *Burkholderia cepacia* from clinical specimens and from environmental samples.

Burkholderia cepacia is an opportunistic pathogen that has been associated with nosocomial infections caused by contaminated equipment, medications, and disinfectants, although the most at risk group are CF patients. Patients with cystic fibrosis have a predisposition for infection and infected patients, if untreated, show a rapid decline in lung function, frequent bacteremia, and death due to lung failure.

Henry, Campbell, LiPuma and Speert devised a new selective medium in 1996 that demonstrated better selectivity and quicker growth of *Burkholderia cepacia* when compared to PC (Pseudomonas cepacia) Agar and OFPBL (oxidative-fermentative, polymyxin, bacitracin, lactose) Agar. Henry et al. showed that using BCSA resulted in fewer false positives, and quicker and better isolation of *Burkholderia* colonies.

**BCSA** contains numerous nutritional components that include pancreatic digest of casein and yeast extract, as well as two carbohydrate sources, lactose and sucrose. The majority of *Burkholderia cepacia* isolates ferment both lactose and sucrose and the acid endproducts result in the medium changing from orange to yellow due to the presence of the pH indicator, phenol red. The increased selectivity of the medium owes itself to four main components: crystal violet. vancomvcin. polymyxin, and gentamicin. Like MacConkey Agar, crystal violet is added to inhibit grampositive organisms especially staphylococci. The limitations of crystal violet activity necessitates the enterococci inclusion vancomycin, a potent glycopeptide that possesses

good bactericidal activity against enterococci and a range of other gram-positive organisms. Polymyxin and gentamicin work synergistically to inhibit and kill numerous aerobic, gramnegative bacilli including *Pseudomonas*.

## Formula per Litre of Medium

Pancreatic Digest of Casein	10.0 g
Yeast Extract	1.5 g
Sodium Chloride	5.0 g
Sucrose	10.0 g
Lactose	10.0 g
Phenol Red	0.08 g
Crystal Violet	0.002 g
Agar	14.0 g
Polymyxin B	600 000 IU
Gentamicin	10.0 mg
Vancomycin	2.5 mg

pH  $7.2 \pm 0.2$ 

#### **Recommended Procedure**

- 1. Allow plates to adjust to room temperature prior to inoculation.
- Appropriate patient samples for testing include sputum, bronchial washings, and pharyngeal swabs. Environmental samples, disinfectants, and other suspect solutions can also be tested.
- 3. Using a direct or diluted inoculum from the sample, perform a four-quadrant streak to obtain well-isolated colonies. If the sample is contained on a swab, roll the swab over a small area near the edge of the plate and proceed to streak for isolation using a sterile loop.

- 4. Incubate plates aerobically at 35°C.
- 5. Examine plates daily for up to 48 hours.

#### **Interpretation of Results**

Typically, *Burkholderia cepacia* colonies appear as greenish-brown colonies with yellow halos. The yellowing of the medium signifies carbohydrate fermentation and may not occur with all *Burkholderia cepacia* isolates.

Any growth is considered a positive result and additional biochemical and/or serological tests should be performed on isolated colonies from pure culture in order to complete identification.

- Other organisms such as Enterococcus faecalis and Burkholderia pickettii may grow on BCSA
- The high selectivity of this medium may warrant parallel plating of specimens onto a less selective medium to characterize other potential pathogens (Stenotrophomonas maltophilia, a nosocomil pathogen prevalent in CF patients, is inhibited on BCSA)
- The high concentration of polymyxin in the medium will inhibit many yeasts and molds

## **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 Results

Burkholderia cepacia Growth

ATCC 25416 Greenish-brown with

yellow halo

Pseudomonas aeruginosa Complete inhibition

ATCC 27853

### Storage and Shelf Life

Our Burkholderia Cepacia Selective Agar should be stored away from direct light at 4°C to 8°C. The medium side should be uppermost to prevent excessive accumulation of moisture on the agar surface. Under these conditions this medium has a shelf life of 8 weeks from the date of manufacture.

#### References

- Tablan OC, Carson LA, Cusick LB, Bland LA, Martone WJ, Jarvis WR. Laboratory proficiency test results on use of selective media for isolating *Pseudomonas cepacia* from simulated sputum specimens of patients with cystic fibrosis. J Clin Micro 1987; 25:485-7.
- 2. Burdge DR, Noble MA, Campbell ME, Krell VL, Spreet DP. *Xanthomonas maltophilia* misidentified as *Pseudomonas cepacia* in cultures of sputum from patients with cystic fibrosis: a diagnostic pitfall with major clinical implications. Clin Infect Dis 1994; 20:445-8.
- 3. Henry DA, Campbell ME, LiPuma JJ, Speert DP. Identification of *Burkholderia cepacia* isolates from patients with cystic fibrosis and use of a simple new selective medium. J Clin Micro 1997; 35:614-9.
- 4. Murray P R, Baron E, Pfaller M, Tenover F, Yolken R. Manual of Clinical Microbiology, 7th ed. Washington: ASM, 1999.

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