Schuberts Arginine Broth

M1617

Schuberts Arginine Broth is used as an enrichment broth for testing swimming pool water for isolation of chlorine damaged *Pseudomonas aeruginosa* .

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	17.000
Soya peptone	3.000
D-Glucose	0.500
Sodium chloride	5.000
L-Arginine monohydrochloride	10.000
Bromothymol blue	0.0075
Cresol red	0.010
Brilliant green	0.00038
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 35.52 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Mix well and dispense into sterile tubes or flasks as desired. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

Swimming pool is a body of water of limited size contained in a holding structure. Indicators of health risk in swimming pools include normal skin flora that are shed, such as *Pseudomonas* and *Staphylococcus* (1, 2). However these bacteria may be stressed or injured due to chlorination. These injured bacteria are incapable of growth and colony formation under standard conditions because of structural or metabolic changes (3).

Schuberts Arginine Broth is used as an enrichment medium for chlorine-stressed *Pseudomonas aeruginosa* strains (4). Schuberts Arginine Broth, formulated by Schuberts (5), utilizes the fact that with arginine, *P. aeruginosa* produces a strongly alkaline reaction resulting in an easily identifiable colour change from grey-green to blue-violet. The indicators used for this purpose are bromothymol blue and cresol red. The medium may be used with either the membrane filter or the liquid enrichment technique.

Casein enzymic hydrolysate and soya peptone serve as rich sources of carbon, nitrogen and essential growth nutrients. Glucose is the energy source. Brilliant-green inhibits the accompanying gram-positive flora while having no toxic effect on pre-stressed *P. aeruginosa* . A color change from grey-green to blue-violet indicates the presence of *P. aeruginosa* allowing presumptive detection of *P. aeruginosa* .

Quality Control

Appearance

Light yellow to light blue homogeneous free flowing powder

Colour and Clarity of prepared medium

Grey green coloured clear solution in tubes

Reaction

Reaction of 3.55% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH

6.80-7.20

Cultural Response

M1617: Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth (Plain)	Colour change to violet
Cultural Response			
Pseudomonas aeruginosa ATCC 27853	50-100	good-luxuriant	positive reaction
Pseudomonas aeruginosa ATCC 9027	50-100	good-luxuriant	positive reaction
Pseudomonas stutzeri ATCC 17832	50-100	None-poor	negative reaction
Aeromonas hydrophila ATCC 7966	50-100	good-luxuriant	positive reaction
Enterococcus faecallis ATCC 19433	50-100	fair-good	negative reaction
Escherichia coli ATCC 25922	50-100	good-luxuriant	variable reaction

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

Reference

1. Seyfried P. L., Tobin R. S., Brown N. E. and Ness P. F., 1985, Am. J. Pub. Health 75 : 1071
2. Klapes N. A. and Vesley D., 1988, Appl. Environ. Microbiol. 52 : 589
3. Eaton A. D., Clesceri L. S. and Greenberg A. E. (Ed.), 1998, Standard Methods for the Examination of Water and Wastewater, 20th Ed., American Public Health Association, Washington, D.C.
4. DIN 38411, Part 8, May 1982, Nachweis Van Pseudomonas aeruginosa.
5. Schubert, R., 1989, Zbl. Bakt. Hyg. B 187; 266-268.

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