AOAC
BAM
EP
USP
JP
DIN

# Pseudomonas Selective Agar, Base (Cetrimide Agar)

## CETRIMIDE Agar

A modification of the medium proposed by BROWN and LOWBURY (1965) for the isolation and differentiation of *Pseudomonas aeruginosa* from various materials.

## General Information

This medium complies with the recommendations of the harmonised method in the European Pharmacopeia 5.6 and the United States Pharmacopeia 29 (2006).

## Mode of Action

The use of cetrimide (cetyltrimethylammonium bromide) was recommended by LOWBURY (1951) and other authors; this compound largely inhibits the growth of the accompanying microbial flora. According to LOWBURRY and COLLINS (1955), a concentration of 0.3 g/litre inhibits the accompanying organisms satisfactorily and minimizes interference with the growth of *Ps. aeruginosa*. The pigment production of Ps. aeruginosa is not inhibited when grown on this medium.

GOTO and ENOMOTO (1970) recommend the addition of 15 µg nalidixic acid/ml to improve the inhibition of the accompanying microbial flora.

## Typical Composition (g/litre)

Peptone from gelatin 20.0; magnesium chloride 1.4; potassium sulfate 10.0; N-cetyl-N,N,N-trimethylammoniumbromide (cetrimide) 0.3; agar-agar 13.6.

Also be added:

Glycerol 10 ml.

## Preparation

Suspend 45.3 g/litre, add 10 ml glycerol/litre, autoclave (15 min at 121 °C). Pour plates.

pH: 7.2 ± 0.2 at 25 °C.

The plates are turbid and light brown.

## Experimental Procedure and Evaluation

Inoculate by spreading the sample on the surface of the plates.

Incubation: Pseudomonas aeruginosa 18 h at 35 °C, others 72 h.

Ps. aeruginosa colonies produce a yellow-green pigment (pyocyanin) and fluoresce under UV light. Further tests should be performed for further identification (HUGH and LEIFSON 1953, KOVACS 1956, THORNLEY 1960, BÜHLMANN et al. 1961 etc).

## Literature


DIN Deutsches Institut für Normung e.V.: Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlammuntersuchung. Mikrobiologische Verfahren. Nachweis von Pseudomonas aeruginosa. - DIN 38411-8 (1982).

BROWN, V.I., a. LOWBURY, E.J.L.: Use of improved cetrimide agar medium and other culture methods for Pseudomonas aeruginosa. – J. Clin. Pathol., 18; 752-756 (1965).

BUHLMANN, X., FISCHER, W.A., a. BRUHN, J.: Identification of a pyocyanogenic strains of Pseudomonas aeruginosa. – J. Bact., 82, 787-788 (1961).

European Pharmacopeia 5.6, Chapter 2.6.13 B (Harmonised Method), Microbial examination of nonsterile products: Tests for specified microorganisms, 2006.

GOTO, S., a. ENOMOTO, S.: Nalidixic acid cetrimide agar. A new selective plating medium for the selective isolation of Pseudomonas aeruginosa. - Japan J. Microbiol., 14; 65-72 (1970).

HUGH, R., a. LEIFSON, E.: The taxonomic significance of fermentative versus oxidative metabolism of carbohydrates by various gramnegative bacteria. - J. Bact., 66; 24-26 (1953).

KOVACS, N.: Identification of Pseudomonas pyocyanea by the oxidase reaction. – Nature (Lond.), 178; 703 (1956).

LOWBURY, E.J.L.: Improved culture methods for the detection of Ps. pyocyanea. – J. Clin. Pathol., 4; 66-72 (1951).

LOWBURY, E.J.L., a. COLLINS, A.G.: The use of a new cetrimide product in a selective medium for Pseudomonas pyocyanea. – J. Clin. Pathol., 8; 47-48 (1955).

THORNLEY, M.J.: The differentiation of Pseudomonas from other gram-negative bacteria on the basis of arginine metabolism. – J. Appl. Bact., 23; 37-52 (1960).

United States Pharmacopeia 29 - NF 24, Chapter 62, Microbial examination of nonsterile products: Tests for specified microorganisms, 2006.


## Ordering Information

| Product | Ordering No. | Pack size |
|---|---|---|
| Pseudomonas Selective Agar, Base (Cetrimide Agar) | 1.05284.0500 | 500 g |
| Glycerol (about 87 %) | 1.04094.0500 | 500 ml |
| UV Lamp (366nm) | 1.13203.0001 | 1 ea |

Pseudomonas aeruginosa ATCC 9027

## Quality control (spiral plating method)

| Test strains | Inoculum (CFU) | Recovery (%) | Yellow-green pigment |
|---|---|---|---|
| Pseudomonas aeruginosa ATCC 9027 | 10 - 100 | ≥ 30 | + |
| Pseudomonas aeruginosa ATCC 25668 | 10 - 100 | ≥ 30 | + |
| Pseudomonas aeruginosa ATCC 27853 | 10 - 100 | ≥ 30 | + |
| Escherichia coli ATCC 8739 | > $10^4$ | no growth | - |
| Proteus mirabilis ATCC 29906 | > $10^4$ | no growth | - |
| Salmonella typhimurium ATCC 14028 | > $10^4$ | no growth | - |
| Staphylococcus aureus ATCC 6538 | > $10^4$ | no growth | - |