

Pseudomonas Agar F, Base

Elective culture media proposed by KING, WARD and RANEY (1954) for the isolation and differentiation of *Pseudomonas* based on the formation of pyocyanin and/or pyorubin or fluorescein.

This media comply with the recommendations of the United States Pharmacopeia XXVI (2003) and correspond to the culture media specified in the DIN Norm 38411 (examination of water).

Mode of Action

Pseudomonas Agar P favours the formation of pyocyanin and/or pyorubin and reduces that of fluorescein, whereas *Pseudomonas* Agar F stimulates the production of fluorescein and reduces that of pyocyanin and/or pyorubin. Simultaneous use of both culture media allows rapid, preliminary identification of most *Pseudomonas* species, as some strains can only synthesize pyocyanin, some form only fluorescein and others produce both pigments.

Typical Composition (g/litre)

Peptone from casein 10.0; peptone from meat 10.0; magnesium sulfate 1.5; di-potassium hydrogen phosphate 1.5; agar-agar 12.0.

Also to be added:

glycerol 10.0 ml.

Preparation

Suspend 10.0 ml glycerol/litre together with 35 g *Pseudomonas* Agar F Base/litre, dispense into test tubes if desired, autoclave (15 min at 121 °C). Make slant tubes or pour plates.

pH: 7.2 ± 0.2 at 25 °C.

The plates are clear to opalescent and yellowish-brown.

Experimental Procedure and Evaluation

Inoculate the surface of the culture medium with cultures suspected to contain *Pseudomonas* so that individual colonies develop.

Incubation: up to 7 days at 35 °C.

Check for bacterial growth after 24, 48 and 72 hours and then after 6 days.

Pseudomonas aeruginosa appears on *Pseudomonas* Agar F as colonies surrounded by a yellow to greenish-yellow zone resulting from fluorescein production. If pyocyanin is also synthesized, a bright green colour is produced which fluoresces under UV light.

According to BLAZEVIC et al. (1973), atypical pyocyanin-negative, fluorescein-positive *Ps. aeruginosa* strains can be differentiated from *Ps. fluorescens* and *Ps. putida*. BRODSKY and NIXON (1973) reported that the fluorescence of *Ps. aeruginosa* colonies in ultra-violet light following growth on MacCONKEY agar can be exploited to provide a rapid orientation test, *Ps. fluoresce* and *Ps. putida* do not fluoresce and show only scanty growth.

Literature

BLAZEVIC, D.J., KOEPCKE, M.H., a. MATSEN, J.M.: Incidence and identification of *Pseudomonas fluorescens* and *Pseudomonas putida* in the clinical laboratory. – **Appl. Microbiol.**, **25**: 107-110 (1973).

BRODSKY, M.H., a. NIXON, M.C.: Rapid method for detection of *Pseudomonas aeruginosa* on McCONKEY-Agar under ultraviolet light. – **Appl. Microbiol.**, **26**: 219-220 (1973).

DIN Deutsches Institut für Normung e.V.: Deutsche Einheitsverfahren zur Wasser-, Abwasser und Schlammmuntersuchung. Mikrobiologisches Verfahren (Gruppe K). Nachweis von *Pseudomonas aeruginosa* (K 8). – **DIN 38411**.

GEORGIA, F.R., a. POE, C.F.: Study of bacterial fluorescence in various media. I. Inorganic substances necessary for bacterial fluorescence. – **J.Bact.**, **22**: 349 (1931).

GEORGIA, F.R., a. POE, C.F.: Study of bacterial fluorescence in various media. II. The production of fluorescence in media made from peptones. – **J.Bact.**, **23**: 135 (1932).

KING, E.O., WARD, M.K., a. RANEY, D.E.: Two simple media for the demonstration of pyocyanin and fluorescein. – **J. Lab. Clin. Med.**, **44**: 401-307 (1954). United States Pharmacopeia XXVI, Chapter "Microbial Limit Tests", 1995.

Ordering Information

Product	Merck Cat. No.	Pack size
<i>Pseudomonas</i> Agar F, Base	1.10989.0500	500 g
Glycerol	1.04091.0500	500 ml
UV Lamp (366 nm)	1.13203.0001	1 ea

Pseudomonas Agar F, Base

Quality control

Test strains	Growth	Yellow-green pigment in daylight	Fluorescence at 366 nm
<i>Pseudomonas aeruginosa</i> ATCC 27853	good / very good	+	+
<i>Pseudomonas aeruginosa</i> ATCC 9027	good / very good	+	+
<i>Pseudomonas fluorescens</i> ATCC 17397	good / very good (48 h)	±	±
<i>Aeromonas hydrophila</i> ATCC 7966	good / very good	-	-
<i>Escherichia coli</i> ATCC 25922	good / very good	-	-
<i>Enterobacter cloacae</i> ATCC 13047	good / very good	-	-



Aeromonas hydrophila
ATCC 7966



Pseudomonas aeruginosa
ATCC 27853