



Oxacillin Resistance Screening Agar Base

M1454

Oxacillin Resistance Screening Agar Base is used for the screening of oxacillin-resistant microorganisms.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	11.800
Yeast extract	9.000
Mannitol	10.000
Sodium chloride	55.000
Lithium chloride	5.000
Aniline blue	0.200
Agar	12.500
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 51.75 grams in 500 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool at 45-50°C and aseptically add rehydrated contents of 1 vial of Oxacillin Resistance Selective Supplement (FD191). Mix well and pour into sterile Petri plates.

Caution: Lithium chloride is harmful. Avoid bodily contact and inhalation of vapours. On contact with skin, wash with plenty of water immediately.

Principle And Interpretation

Oxacillin Resistance Screening Agar (originally named MRSA Screen Agar) was originally developed for the detection of methicillin-resistant *Staphylococcus aureus* (MRSA). These strains are resistant to penicillinase-resistant penicillins (PRPs), such as methicillin, oxacillin and nafcillin. Since the method to detect MRSA uses the same inoculum as the Bauer-Kirby antimicrobial disc susceptibility test procedure, the oxacillin screen test may be conveniently performed on isolates at the same time as routine susceptibility testing.

The coagulase positive species of *Staphylococcus aureus* is well documented as a human opportunistic pathogen. As a nosocomial pathogen, *Staphylococcus aureus* has been a major cause of morbidity and mortality (1). Resistance to penicillin in *S. aureus* was observed soon after the introduction of penicillin in the late 1940s (2). By the late 1960s, methicillin/oxacillin resistant strains of *S. aureus* began to emerge and has been isolated in the United States (3). Oxacillin (methicillin) resistant *S. aureus* emerged in 1980s as a major clinical and epidemiological problem in hospitals (4).

Peptic digest of animal tissue and yeast extract provide nitrogenous nutrients. Mannitol is the differential fermentable carbohydrate. Most coagulase-negative species of Staphylococci and Micrococci do not ferment mannitol. High sodium chloride content (5.5%) makes the medium selective. Lithium chloride inhibits many contaminating organisms except for *Staphylococcus aureus*. Aniline blue is an inert and ideal indicator of lipolysis when lipase substrates are added to the medium (5).

Occasionally *S. aureus* isolates with borderline resistant MICs may not grow within 24 hours. It is recommended that any equivocal results demonstrated on the screening plate be confirmed with a standard MIC test. The likelihood of the emergence of the resistant subpopulation is greater in a large population of bacterial cells. The oxacillin resistance of bacterial isolates growing on Oxacillin Resistance Screen Agar should be further confirmed by agar or broth dilution. Also the isolates resistant to other antimicrobial agents should be determined that is characteristic of MRSA. The use of Oxacillin-Resistance Screening Agar for the detection of methicillin/oxacillin resistant coagulase-negative Staphylococci is not recommended.

Any growth even one colony, indicates that the isolate is methicillin (oxacillin) resistant. No growth indicates that the organism is susceptible to methicillin and oxacillin. Isolates that grow on Oxacillin Resistance Screen Agar should be reported as resistant to all β -lactam antimicrobial agents, including β -lactam/ β -lactamase inhibitor combinations and cephalosporins.

Quality Control

Appearance

Yellow to grayish yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.25% Agar gel.

Colour and Clarity of Prepared medium

Blue coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 10.35% aqueous solution at 25°C. pH : 7.2±0.2

pH

7.00-7.40

Cultural Response

M1454: Cultural characteristics observed with added Oxacillin Resistance Selective Supplement (FD191), after an incubation at 35-37°C for 18-24 hours.

Organism

Growth

Cultural Response

<i>Staphylococcus aureus</i> ATCC 29213	inhibited (susceptible to oxacillin)
<i>Staphylococcus aureus</i> ATCC 38591	fair to good (presence of colony or haze of growth should be read as resistance)

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. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Tenover F. C., (Eds.), 2003, Manual of Clinical Microbiology, 8th Ed., ASM, Washington, D.C.
2. Florey H. W., Chain E., Heatley N. G., Jennings M. A., Sanders A. G., Abraham E. P., and Florey M. E., (Ed.), Antibiotics, Vol. II, Oxford University Press, London.
3. Barrett F. F., McGehee R. F. Jr., and Finland M., 1968, Methicillin-resistant *Staphylococcus aureus* at Boston City Hospital, Bacteriologic and epidemiologic observations. N. Engl. J. Med. 279:444-448.
4. Boyce J. M, 1990, Infect. Control Hosp. Epidemiol., 11: 639-642.
5. Starr, 1941, Science, 93: 333

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