

TM 2332 - SELECTIVE BROTH FOR MRSA

INTENDED USE

For improved detection of Methicillin Resistant *Staphylococcus aureus* (MRSA).

PRODUCT SUMMARY AND EXPLANATION

Staphylococcus aureus is a common bacterium found on the skin of healthy people. It is responsible for infections ranging from superficial to systemic. *Staphylococcus aureus* resistant to the antibiotic methicillin are referred to as Methicillin Resistant *Staphylococcus aureus* (MRSA). The proportions of both hospitals acquired and community acquired infections caused by MRSA have steadily been increasing worldwide. Initially staphylococcal infections were treated using penicillin. But over the years, resistance to penicillin developed, so methicillin was the next drug of choice. Unfortunately certain strains (MRSA) have now developed resistance to methicillin also. Patients with breaks in their skin due to wounds, indwelling catheters or burns are those with certain risk of developing MRSA infection.

Symptoms in serious cases may include fever, lethargy and headache. MRSA can cause UTI, pneumonia, toxic shock syndrome and even death. Spread of MRSA infections can be controlled to a great extent by maintaining personal hygiene after interaction with an MRSA infected person.

Methicillin-resistant strains of *Staphylococcus aureus* were recognized in 1980's as a major clinical and epidemiological problem. MRSA strains were heterogeneous in their expression of resistance to β -lactam agents, in that large differences in the degree of resistance were seen among the individual cells in a population. The basis of methicillin-resistance is the production of an additional penicillin-binding protein mediated by the *mec A* gene, an additional gene found in methicillin-resistant *Staphylococci*.

COMPOSITION

Ingredients	Gms / Ltr
Tryptone	11.000
Peptone	3.000
Dextrose (Glucose)	2.000
Sodium chloride	26.000
Starch, soluble	1.000
Disodium hydrogen phosphate	2.000
Sodium acetate	1.000
Magnesium glycerophosphate	0.200
Calcium gluconate	0.100
Cobaltous sulphate	0.001
Cupric sulphate	0.001
Ferrous sulphate	0.001
Zinc sulphate	0.001
Manganous chloride	0.002
Menadione	0.001
Cyanocobalamin	0.001
L-Cysteine hydrochloride	0.020
L-Tryptophan	0.020

Pyridoxine hydrochloride	0.003
Calcium pantothenate	0.003
Nicotinamide	0.003
Biotin	0.0003
Thiamine hydrochloride	0.040
Adenine	0.010
Guanine	0.010
Xanthine	0.010
Uracil	0.010

PRINCIPLE

Tryptone, Peptone, dextrose provides nitrogen, carbon compounds, long chain amino acids and other essential growth nutrients. Sodium chloride maintains the osmotic equilibrium of the medium as well as supports the growth of *Staphylococcus* species. Selective Supplement for MRSA is used for the selective growth of MRSA. It contains cefoxitin which is principally aimed at inducing the expression of methicillin resistance and inhibiting the growth of Methicillin Sensitive *Staphylococcus aureus* (MSSA). The supplement also contains aztreonam to inhibit most isolates of the family *Enterobacteriaceae* and colistin which is active against *Pseudomonas* species.

INSTRUCTION FOR USE

- Dissolve 46.4 grams in 1000 ml distilled water.
- Heat if necessary to dissolve the medium completely.
- Sterilize by autoclaving at 15 psi pressure (121°C) for 15 minutes.
- Cool to 45-50°C. Aseptically add rehydrated contents of 1vial of Selective Supplement for MRSA.
- Mix well and dispense as desired.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder : Cream to yellow homogeneous free flowing powder.
Appearance of prepared medium : Light yellow coloured clear solution in tubes.
pH (at 25°C) : 7.4±0.2

INTERPRETATION

Cultural characteristics observed with added Selective Supplement for MRSA after an incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Incubation Temperature	Incubation Period
<i>Escherichia coli</i>	25922	$\geq 10^3$	Inhibited	35-37°C	18-48 Hours
<i>Klebsiella pneumoniae</i>	13881	$\geq 10^3$	Inhibited	35-37°C	18-48 Hours



<i>Staphylococcus aureus</i>	25923	$\geq 10^3$	Inhibited	35-37°C	18-48 Hours
<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	6538	$\geq 10^3$	Inhibited	35-37°C	18-48 Hours
<i>Staphylococcus aureus</i> , MRSA	43300	50-100	Good-luxuriant	35-37°C	18-48 Hours

PACKAGING:

In pack size of 500 gm bottles.

STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.













Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

1. Dr. Alan Johnson, Methicillin resistant *Staphylococcus aureus* (MRSA) infection, The support group for MRSA sufferers and Dependents, AUG 1st, 2005.
2. Doyle, Beuchat and Montville, (Eds.), 1997, Food Microbiology Fundamentals and Frontiers. American Society for Microbiology, Washington, D.C.
3. Isenberg, H.D. Clinical Microbiology Procedures Handbook.2nd Edition.
4. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock, D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
5. Methicillin Resistant *Staphylococcus aureus*, Copyright © 1997-2005, Canadian Centre for Occupational Health and Safety, Sept 19th, 2005.
6. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Tenover F. C., (Ed.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
7. Okonogi, K., Y. Noji, M. Kondo, A. Imada, and T. Yokota. 1989. Emergence of methicillin-resistant clones from cephamycin-resistant *Staphylococcus aureus* J. Antimicrob. Chemother. 24:637-645.

 Good Manufacturing Practices Certified	 For In Vitro Diagnostic Use	 Quantity	 Lot / Batch Number	 Catalogue Number	 Manufacturer
 Temperature Unit	 Authorized Representative	 European Conformity	 QR Code	 Consults Instructions for Use	 Best Before

NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

***For Lab Use Only**
Revision: 08 Nov., 2019

