

Synthetic Broth, AOAC (Wright and Mundy Broth)**M334**

Synthetic Broth, AOAC is a chemically defined medium recommended by AOAC for growing inoculum, making subcultures and preparing various dilutions while testing disinfectants.

Composition***

Ingredients	Gms / Litre
L-Cystine	0.050
DL-Methionine	0.370
L-Arginine	0.400
DL-Histidine	0.300
L-Lysine	0.850
L-Tyrosine	0.210
DL-Threonine	0.500
DL-Valine	1.000
L-Leucine	0.800
DL-Isoleucine	0.440
Amino acetic acid	0.060
DL Serine	0.610
DL-Alanine	0.430
L-Glutamic acid	1.300
L-Aspartic acid	0.450
DL-Phenylalanine	0.260
DL-Tryptophan	0.050
L-Proline	0.050
Sodium chloride	3.000
Potassium chloride	0.200
Magnesium sulphate	0.050
Monopotassium phosphate	1.500
Disodium phosphate	4.000
Thiamine hydrochloride	0.010
Nicotinamide	0.010
Final pH (at 25°C)	7.1±0.2

***Formula adjusted, standardized to suit performance parameters

Directions

Suspend 16.9 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Dispense 10 ml amounts in 20x150 mm culture tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to room temperature and just before use, aseptically add 0.1 ml of 10% sterile dextrose solution.

Principle And Interpretation

The phenol coefficient test has been employed for determining the germicidal efficiency of disinfectants for over 30 years since Rideal and Walker developed their original method in 1903 (1). In addition to being a satisfactory index of the germicidal value of phenol like disinfectants, the phenol coefficient is used as basis for determining the dilutions, which may safely be employed in practice. The phenol coefficient of each disinfectant was first determined by the Food and Drug Administration method, 1931 (2). Since then there is no standard method for testing disinfectants under practical conditions. Synthetic Broth is prepared, based on the formulation described by Wright and Mundy (3) and is recommended by AOAC (4) for determining phenol coefficients of disinfectants. Variability in test cultures affects germicide testing. This medium minimizes variability of cultures and of media. It contains nutrients necessary for the growth of *Salmonella Typhi*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*. These media are used for growing the inoculum and for subcultures used for the dilutions of disinfectant under test.

Quality Control**Appearance**

White to cream homogeneous free flowing powder

Prepared Medium

colourless clear solution without any precipitate

Reaction

Reaction of 1.69% w/v aqueous solution at 25°C. pH : 7.1±0.2

Cultural Response

M334: Cultural characteristics observed after an incubation at 35-37°C for 40-48 hours

Organism	Inoculum (CFU)	Growth				
Cultural Response						
<i>Pseudomonas aeruginosa</i> ATCC 27853	50-100	luxuriant				
<i>Salmonella Typhi</i> ATCC 6539	50-100	luxuriant				
<i>Staphylococcus aureus</i> ATCC 25923	50-100	luxuriant				
Growth at 30-35°C for <= 3 days						
Growth at 20-25°C for <= 5 days						
Growth at 30-35°C for <= 3 days						
Growth at 20-25°C for <= 5 days						

Reference

1. Rideal S., Walker J. T. A., 1903, Examination of disinfectants, J. San. Inst. 24, 424-441
2. United States of Food and Drug Administration Methods for testing Antiseptics and Disinfectants. Circular No.198. December 1931.
3. Wright E. S. and Mundy R. A., 1960, J. Bacteriol., 80:279.
4. Williams S., (Ed.), 2005, Official Methods of Analysis of the Association of Official Analytical Chemists, 19th Ed., AOAC, Washington, D.C.

Storage and Shelf Life