

NEWSLETTER

Best Practices in Blood Culture Collection

Happy New Year **2014**

Introducing... BACTEC™ MYCO/F LYTIC Medium



Summary¹

- ◆ Nonselective culture medium for optimal recovery of mycobacteria from blood, and yeast and fungi from blood and sterile body fluids
- ◆ Simplified ordering and inventory by providing one medium for the detection of both organism groups
- ◆ No supplement addition necessary: improves workflow
- ◆ Incorporates lysing agent for detection of phagocytized organisms
- ◆ May be specifically beneficial for at-risk patient groups (HIV [AIDS], immunocompromised, etc.): improved patient outcome

Optimal Blood Volume

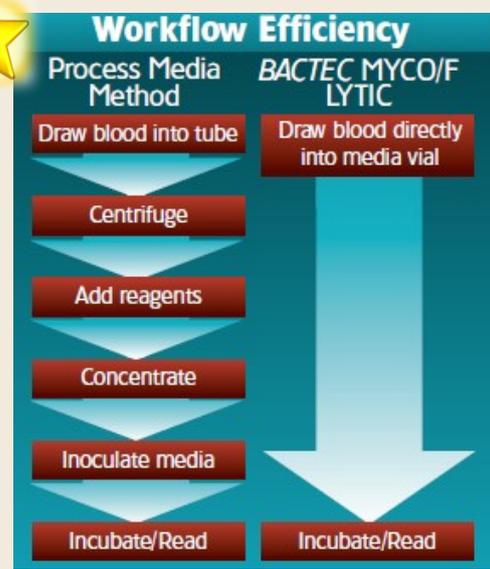
- ◆ 3mL - 5mL

Recommended incubation protocol

- ◆ Yeast: 7 days
- ◆ Fungi: 30 days
- ◆ Mycobacteria: 42 days

Simple **2-Step** Whole Blood Procedure:

- * uses whole blood, simplifying testing compared to media requiring processed patient samples
- * saves valuable time, labour, materials and costs



The detection of fungemia and mycobacteremia has become increasingly important during the past several years. Various manual, semi automated, and fully automated culture systems may be used to recover these organisms from blood. For optimal efficiency, a fully automated system and media that are directly inoculated with the blood specimen are most desirable. Because many patients at risk for fungemia are also at risk for mycobacteremia, a fully automated blood culture system that accommodates one medium that can be directly inoculated with blood and that recovers both fungi and mycobacteria would enhance efficiency in the microbiology laboratory and would potentially decrease the amount of blood that would need to be collected from the patient.²

The **BACTEC™** fluorescent series instruments are designed for the rapid detection of microorganisms in clinical specimens. **BACTEC™ Myco/F Lytic Culture medium** is a Middlebrook 7H9 and Brain Heart Infusion

broth formulation for the recovery of mycobacteria from blood specimens and yeast and fungi from blood and sterile body fluids. Specific modifications were made to enhance the growth and recovery of mycobacteria, yeast and fungi. These modifications include ferric ammonium citrate to provide an iron source for specific strains of mycobacteria and fungi, the addition of saponin as a blood lysing agent and the addition of specific proteins and sugars to provide nutritional supplements. Each vial contains a sensor which can detect decreases in oxygen concentration in the vial resulting from microorganism metabolism and growth. The sensor is monitored by the BACTEC™ fluorescent series instrument for increasing fluorescence which is proportional to the decrease in oxygen. A positive determination indicates the presumptive presence of viable microorganisms in the vial.¹

REAGENTS¹

List of Ingredients

Processed Water	40 mL qs
7H9 Middlebrook Broth Base without phosphate salts	0.12% w/v
Brain Heart Infusion.....	0.5% w/v
Casein Hydrolysate.....	0.10% w/v
Supplement H.....	0.10% w/v
Inositol	0.05% w/v
Glycerol	0.10% w/v
Sodium Polyanetholsulfonate	0.025% w/v
Polysorbate 80.....	0.0025% w/v
Pyridoxal HCl	0.0001% w/v
Ferric Ammonium Citrate	0.006% w/v
Potassium Phosphate	0.024% w/v
Saponin	0.24% w/v
Antifoam.....	0.01% w/v

Composition may have been adjusted to meet specific performance requirements.

This BACTEC medium is dispensed with added CO₂ and O₂.

BACTEC Myco/F Lytic medium requires no supplement addition.

Each 40 mL vial of BACTEC Myco/F Lytic is ready for use when received.

The appearance of the media upon receipt should be clear and light amber in colour.

Advantages of **BACTEC™ Myco/F Lytic medium** in relation to the traditional method (lysis-centrifugation based procedure) for the detection of mycobacteria from blood specimens:³

- recover a significantly superior number of mycobacteria isolates
- detection time is significantly shorter
- lower blood volume required - 5 mL
- no false negative results
- very low percentage of false positive signals (0.7%)
- simpler laboratory procedure with a lower contamination risk, both for samples and staff, during sample processing
- low cost materials used

In summary, the detection of mycobacteremia with the BACTEC™ Myco/F Lytic system is a rapid, simple, safe, economic and high diagnostic yield procedure for the detection of mycobacteremia.

Table 1
Summary of the results obtained with both methods³

	Positive Cultures (%)	Days of incubation	Contaminated cultures (%)
Myco/F Lytic method	23 (8.4%)	17	3 (1.1%)
Traditional method	11 (4.0%)	44	21 (7.6%)
Significance	P = 0.034	p < 0.001	p < 0.001

References

1. Package Insert, BD BACTEC Myco/F Lytic Blood Culture.
2. R. T. Waite and G. L. Woods. 1998. Evaluation of BACTEC Myco/F Lytic Medium for Recovery of Mycobacteria and Fungi from Blood. J. Clin. Microbiol. 36:1176-1179.
3. L. Martinez-Sanchez et al. 2000. Utility of the BACTEC Myco/F Lytic Medium for the Detection of Mycobacteria in Blood. Diagnostic Microbiology and Infectious Disease 38:223-226.

