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INTENDED USE

Bovine Albumin 5% is used to enrich media for cultivating a large variety of microorganisms and tissue cells. Bovine albumin is also known as bovine serum albumin or BSA.¹

Bovine albumin can be added to normally sterile specimens, tissues and body fluids for direct inoculation onto culture media used for isolating mycobacteria. BSA is also used as an enrichment when contaminated specimens are digested.

SUMMARY AND EXPLANATION

Davis and Dubos² recommended the use of bovine albumin at a final concentration of 0.5% in liquid media for culturing *Mycobacterium tuberculosis*. In this study, bovine albumin neutralized the toxicity of fatty acids and permitted more luxuriant growth of *M. tuberculosis*. Ellinghausen and McCullough³ used bovine albumin fraction V at a final concentration of 1% in liquid, semisolid and solid media for culturing leptospire. Morton et al.⁴ demonstrated that 1% bovine albumin stimulated growth of *Mycoplasma* (PPL0).

PRINCIPLES OF THE PROCEDURE

Bovine Albumin 5% is a filter sterilized solution of Bovine Albumin Fraction V. BSA is suggested as a culture media enrichment because of its buffering capacity and detoxifying effect on specimen sediment.¹ Bovine Albumin 5% also increases adhesion of the specimen to solid media.¹

REAGENTS

Bovine Albumin 5%

Warnings and Precautions:

For *in vitro* Diagnostic Use.

Tubes with tight caps should be opened carefully to avoid injury due to breakage of glass.

Pathogenic organisms, including hepatitis viruses and Human Immunodeficiency Virus, may be present in clinical specimens. "Standard Precautions"⁵⁻⁸ and institutional guidelines should be followed in handling all items contaminated with blood and other body fluids. Prior to discarding, sterilize specimen containers and other contaminated materials by autoclaving.

Biosafety Level 2 practices and procedures, containment equipment and facilities are required for non-aerosol-producing manipulations of clinical specimens such as preparation of acid-fast smears. All aerosol-generating activities must be conducted in a Class I or II biological safety cabinet. Biosafety Level 3 practices, containment equipment and facilities are required for laboratory activities in the propagation and manipulation of cultures of *M. tuberculosis* and *M. bovis*. Animal studies also require special procedures.⁷

Storage Instructions: On receipt, store at 2 to 8 °C in the dark. Avoid freezing and overheating. Do not open until ready to use. Minimize exposure to light. Allow the medium to warm to room temperature before use.

Product Deterioration: Do not use if product shows evidence of microbial contamination, evaporation, or other signs of deterioration.

SPECIMEN COLLECTION AND HANDLING

Specimens suitable for culture may be handled using various techniques. For detailed information, consult appropriate texts.^{9,10} Specimens should be obtained before antimicrobial agents have been administered. Provision must be made for prompt delivery to the laboratory.

PROCEDURE

Material Provided: Bovine Albumin 5%

Materials Required But Not Provided: Ancillary culture media, reagents, quality control organisms and laboratory equipment as required for this procedure.

Method of Preparation: For use as a culture medium enrichment, refer to the label of the dehydrated base being used for specific instructions.

Refer to the final concentration of Bovine Albumin in the procedure being used to inoculate specimens. A 0.2% solution of Bovine Albumin 5% is recommended for the inoculation of sterile and contaminated specimens when isolating mycobacteria.¹

Test Procedure: Observe aseptic techniques.

Sterile Specimens for the Isolation of Mycobacteria¹

Normally sterile tissues may be ground in 0.2% BSA and inoculated directly in culture media. Concentrate body fluids before inoculation because they normally contain only a small number of mycobacteria. Centrifuge fluids at ≥ 3,000 x g and inoculate the sediment into liquid or solid media. For a complete discussion of the inoculation of sterile specimens, refer to appropriate references.

Contaminated Specimens for the Isolation of Mycobacteria¹

A concentration of 0.2% BSA can be added to specimen sediment that has been digested and centrifuged by the NALC-NaOH digestion method or by using the **BBL™ MycoPrep™** Mycobacterial Specimen Digestion/Decontamination Kit. Using a separate sterile pipette for each tube, add 1 – 2 mL of 0.2% BSA, then resuspend the sediment with the pipette or by shaking the tube gently by hand.

Several digestion procedures exist. Consult appropriate references for a complete discussion on all digestion and decontamination methods and other testing procedures.^{9,10}

User Quality Control

Identity Specifications

Appearance: Light Amber, clear to very slightly opalescent

Reaction of solution at 25 °C: pH 7.0 ± 0.2

Cultural Response

Prepare Dubos Broth Base per label directions, substituting Bovine Albumin 5% for Dubos Medium Albumin. Inoculate and incubate at 35 ± 2 °C under CO₂ for up to 3 weeks.

Organism	ATCC®	Inoculum CFU	Recovery
<i>Mycobacterium intracellulare</i>	13950	10 ² – 10 ³	Good
<i>Mycobacterium tuberculosis</i> H37Ra	25177	10 ² – 10 ³	Good

Quality control requirements must be performed in accordance with applicable local, state and/or federal regulations or accreditation requirements and your laboratory's standard Quality Control procedures. It is recommended that the user refer to pertinent CLSI guidance and CLIA regulations for appropriate Quality Control practices.

RESULTS

All media should be examined closely for evidence of growth. Refer to the procedure established by laboratory policy or to appropriate references on typical growth patterns and confirmation tests.

Following decontamination and concentration by centrifugation, the sedimented specimen is resuspended in 1 to 2 mL of sterile 0.2% bovine albumin fraction V. This suspension is then used to inoculate media and prepare microscopic smears.⁹

LIMITATION OF THE PROCEDURE

Bovine Albumin 5% is not recommended for use with the **BACTEC™** Blood Culture System because BSA may delay detection times.¹

PERFORMANCE CHARACTERISTICS

Prior to release, all lots of Bovine Albumin 5% are tested for specific product characteristics. Bovine Albumin 5% is substituted for Dubos Medium Albumin in the preparation of Dubos Broth. Using a 0.01 mL calibrated loop, tubes of the complete medium are inoculated with cultures diluted to contain 300 colony-forming units (CFU) per 0.01 mL of *Mycobacterium intracellulare* (ATCC 13950) and *M. tuberculosis* (ATCC 25177 and ATCC 27294). After inoculation, the tubes are incubated with loosened caps at 35 ± 2 °C in an atmosphere supplemented with 5 to 10% carbon dioxide. Tubes are read for growth and pigmentation after 7, 14 and 21 days incubation. All organisms exhibit moderate to heavy growth within 21 days.

AVAILABILITY

Cat. No. Description

215330 **Difco™** Bovine Albumin 5%, Prepared Tubes, 20 mL, Pkg. of 10

REFERENCES

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8. Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC). *Official Journal L262, 17/10/2000, p.0021-0045.*
9. Murray, P.R., E.J. Baron, M.A. Pfaller, F.C. Tenover, and R.H. Tenover (ed.), 1999. *Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.*
10. Forbes, B.A., D.F. Sahn, and A.S. Weissfeld. 1998. *Bailey & Scott's diagnostic microbiology, 10th ed. Mosby, Inc., St. Louis.*

Technical Information: In the United States contact BD Technical Service and Support at 800-638-8663 or www.bd.com/ds.



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