BBL™ Schaedler Broth with Vitamin K_1

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QUALITY CONTROL PROCEDURES

I INTRODUCTION

Schaedler Broth with Vitamin K_1 is an enriched general-purpose medium for the cultivation of fastidious aerobic and anaerobic microorganisms.

II PERFORMANCE TEST PROCEDURE

1. Heat tubes in boiling water* and allow to cool with tightened caps prior to use.

   ***NOTE:** Use of a microwave oven is not recommended.

2. Inoculate representative samples with the cultures listed below.

   a. Inoculate tubes with 1.0 mL of dilutions containing 1000 or less CFU/mL for all organisms except *Clostridium novyi* A. For *C. novyi* A inoculate tubes with 1.0 mL of dilutions containing 1 x 10^5 to 1 x 10^6 CFU/mL. Prepare the dilutions using 18- to 24-h **Trypticase™** Soy Broth cultures of the *Staphylococcus* and *Streptococcus* strains and 18- to 24-h Chopped Meat Carbohydrate Broth PR II cultures for the remaining organisms.

   b. Incubate tubes with loosened caps at 35 ± 2 °C in an aerobic atmosphere (*Staphylococcus* and *Streptococcus* strains) and in an anaerobic atmosphere supplemented with carbon dioxide as provided by the **BD GasPak™** EZ anaerobic system (obligate anaerobic organisms).

3. Examine tubes after 7 days for growth.

4. Expected Results

Organisms	ATCC™	Recovery
**Peptostreptococcus anaerobius*	27337	Growth
Bacteroides fragilis	25285	Growth
**Clostridium novyi* A	7659	Growth
**Staphylococcus aureus*	25923	Growth
Streptococcus pneumoniae	6305	Growth

*Recommended organism strain for User Quality Control.

III ADDITIONAL QUALITY CONTROL

1. Examine tubes as described under “Product Deterioration.”
2. Visually examine representative tubes to assure that any existing physical defects will not interfere with use.
3. Incubate uninoculated representative tubes at 20 – 25 °C and 30 – 35 °C and examine after 7 days for microbial contamination.

PRODUCT INFORMATION

IV INTENDED USE

Schaedler Broth is used for the cultivation of fastidious aerobic and anaerobic microorganisms.

V SUMMARY AND EXPLANATION

Schaedler et al.[1] developed several media formulations for the growth of fastidious anaerobic microorganisms such as lactobacilli, streptococci, clostridia and *Bacteroides*. Mata and coworkers[2] modified the Schaedler media by adjusting the peptone content, increasing the concentration of sodium chloride, reducing the amount of dextrose and lowering the yeast extract level.[3] Schaedler Broth has the same formula as Schaedler Agar except that the agar is omitted.

VI PRINCIPLES OF THE PROCEDURE

This medium is highly nutritious due to its content of peptones, dextrose and yeast extract. Hemin supplies the X factor required by many fastidious microorganisms. The incorporation of vitamin K_1 as an additive enables the cultivation of *Prevotella melaninogenica* and is stimulatory for other *Bacteroides* species and for gram-positive nonsporeformers.[4,5] The type of organism recovered in this liquid medium is dependent on the incubation environment (aerobic, aerobic supplemented with carbon dioxide or anaerobic conditions).

VII REAGENTS

Schaedler Broth with Vitamin K_1

Approximate Formula* Per Liter Purified Water

Pancreatic Digest of Casein	8.2 g	Dipotassium Phosphate	0.8 g
Peptic Digest of Animal Tissue	2.5 g	L-Cystine	0.4 g
Papaic Digest of Soybean Meal	1.0 g	Hemin	0.01 g
Dextrose	5.8 g	Vitamin K_1	0.01 g
Yeast Extract	5.0 g	TRIS (hydroxymethyl) aminomethane	3.0 g
Sodium Chloride	1.7 g		

*Adjusted and/or supplemented as required to meet performance criteria.

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 microorganisms, including hepatitis viruses and Human Immunodeficiency Virus, may be present in clinical specimens. “Standard Precautions”[6-9] and institutional guidelines should be followed in handling all items contaminated with blood and other body fluids. After use, prepared tubes, specimen containers and other contaminated materials must be sterilized by autoclaving before discarding.

Storage Instructions: On receipt, store tubes in the dark at 2 – 8 °C. Avoid freezing and overheating. Do not open until ready to use. Minimize exposure to light. Tubed media stored as labeled until just prior to use may be inoculated up to the expiration date and incubated for the recommended incubation times. Allow the medium to warm to room temperature before inoculation.

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

VIII SPECIMEN COLLECTION AND HANDLING

Specimens suitable for culture may be handled using various techniques. For detailed information, consult appropriate texts.[10,11] Specimens should be obtained before antimicrobial agents have been administered. Provisions must be made for prompt delivery to the laboratory.

IX PROCEDURE

Material Provided: Schaedler Broth with Vitamin K_1

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

Test Procedure: Observe aseptic techniques.

Inoculate the specimen directly into the broth medium.

Liquid medium for anaerobic incubation should be reduced prior to inoculation by placing the tubes, with caps loosened, under anaerobic conditions (**BD GasPak** EZ anaerobic system or equivalent) for 18 – 24 h prior to use. Alternatively, liquid media may be reduced immediately prior to use by boiling* with caps loosened and cooling with tightened caps to room temperature before inoculation.

Incubate tubes and/or bottles at 35 ± 2 °C in the appropriate atmosphere (aerobic, anaerobic, or supplemented with carbon dioxide) for up to 7 days.

***NOTE:** Use of a microwave oven is not recommended.

User Quality Control: See "Quality Control Procedures."

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.

X RESULTS

Growth in the tubes is indicated by the presence of turbidity compared to an uninoculated control.

If growth appears, cultures should be examined by Gram stain and subcultured onto appropriate media (e.g., a TSA II and/or Chocolate II Agar plate, LEMB Agar or MacConkey II Agar plate, etc.). If obligate anaerobes are suspected, subcultures should be incubated anaerobically (**BD GasPak** EZ anaerobic system).

XI LIMITATIONS OF THE PROCEDURE

For identification, organisms must be in pure culture. Morphological, biochemical, and/or serological tests should be performed for final identification. Consult appropriate texts for detailed information and recommended procedures.[10-12]

Culture media sometimes contain dead organisms derived from medium constituents, which may be visible in smears of culture media. Other sources of dead organisms visible upon Gram staining include staining reagents, immersion oil, glass slides and the specimens used for inoculation. If there is uncertainty about the validity of the Gram stain, the culture should be reincubated for another hour or two and the test repeated before a report is given.

XII PERFORMANCE CHARACTERISTICS

Stalons et al.[13] found Schaedler Broth to be most effective medium of nine broth media tested for the growth of obligatory anaerobic bacteria when incubated in an anaerobic atmosphere.

XIII AVAILABILITY

Cat. No.	Description
221541	**BD BBL™** Schaedler Broth with Vitamin K_1, Pkg. of 10 size K tubes
221542	**BD BBL™** Schaedler Broth with Vitamin K_1, Ctn. of 100 size K tubes

XIV REFERENCES

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