Glucose Broth Supplemented with 0.05% SPS

Intended Use
Blood culture media support the growth of a wide variety of clinically important pathogenic microorganisms. Microxpress® Glucose Broth with 0.05% SPS is generally recommended for the detection of most aerobic/anaerobic bacteria and other fastidious microorganisms in blood.

Summary
The occurrence of a sudden relative change in pulse rate and temperature with or without chills, hyperventilation are indications of suspected septicemia. Septicemia in hospital patients has increased over the past decade from 10 to around 15 cases / 1000 admissions, with a corresponding increase in morbidity and mortality. The number of clinically important isolates from blood cultures has doubled in the past four years. Hence, for cases of suspected septicemia, the culture of blood for bacteria and fungi is mandatory. Blood culture media are used primarily for culturing blood to detect aerobic, facultative anaerobic or anaerobic bacteria present in the blood stream. Besides, blood culture media can also be used for culturing other clinical specimens and are suitable for general use in diagnostic microbiology.

Principle
Microxpress® Glucose Broth with 0.05% SPS use the indirect procedure for obtaining the blood specimen from the patient. Blood is withdrawn from the patient using a sterile needle and syringe and is added to the Blood Culture Bottle containing 0.05% Sodium Polyanethol Sulfonate (SPS). Sodium Polyanethol Sulfonate (SPS) is a polyanionic anticoagulant, which inhibits complement and lysozyme activity, interferes with phagocytosis and inactivates aminoglycosides. It is generally considered to enhance the rate and speed of bacterial isolations by counter-acting the bacterial inhibitors of human blood. After thorough and gentle mixing, the blood specimen is added generally in the ratio of 1 mL of blood to 10 mL of broth to the blood culture bottle. The bottle is incubated and observed for turbidity, colour change, hemolysis, gas formation or other evidence of microbial growth.

Formula*
Glucose Broth with 0.05% SPS is formulated as:

Ingredients	**g/L**
Glucose	5.0
Tryptone	10.0
Sodium Chloride	5.0
SPS	0.05
pH	7.3 ± 0.2

*Adjusted to suit performance standards.

Additional Materials Required
Needle and syringe for blood collection, isopropyl alcohol (70%), incubator/water bath at 37°C±2°C, sterile venting units and autoclave.

Specimen Collection and Preparation
1. No special preparation of the patient is required prior to sample collection by approved techniques.
2. The specimen must be collected using sterile techniques to reduce the chance of contamination.
3. Collect approximately 8-10 mL of patient's blood when using the 70 mL Blood culture medium bottle and approximately 1-3 mL when using the 20 mL Blood culture medium bottle and approximately 0.5-1.5 mL when using the 5 mL Blood Culture Medium bottle.
4. Samples should be stored at 2°C-8°C if not tested immediately.
5. Avoid using hemolysed samples for testing.

Storage and Stability
1. Store the blood culture media in cool, dry place at 15°C-25°C away from direct light.
2. Stability of the blood culture media is as per the expiry date mentioned on the label.

Directions

1. Bring the appropriate blood culture bottle to R.T. (22°C-30°C) before testing.
2. Label the bottle with the appropriate patient I.D.
3. Withdraw blood from the patient using a sterile needle and syringe.
4. Transfer the blood withdrawn, immediately into the blood culture bottle under aseptic conditions.
5. Vent one bottle for aerobic incubation and leave the other bottle unvented for anaerobic incubation at 37°C±2°C for 7 days or until growth appears before reporting a negative blood culture.
6. Lower temperatures may be preferable for detection of fungi, *Listeria* and some other pathogens.
7. Observe the bottles at intervals of 24 hours for changes in physical appearance such as turbidity, colour change, hemolysis, gas formation or other evidence of microbial growth.

Quality Control

Appearance: Light amber coloured, clear solution without any precipitate.
Appearance on Addition of Blood: Cherry red coloured opaque solution without any blood clot.
Cultural Response: Cultural response is observed after an incubation of 18-24 hours at 35°C-37°C and subculturing is carried out on Blood Agar.

Organism (ATCC)	**Growth**	**Subculturing on Blood Agar**
Escherichia coli (25922)	Good	-
Salmonella enterica subsp. *enterica* serovar *Typhimurium* (23564)	Good	-
Staphylococcus aureus subsp. *aureus* (25923)	Good	Beta Haemolysis
Streptococcus pyogenes Strain Bruno (19615)	Good	Beta Haemolysis

Interpretation of Results

Growth in the broth medium is indicated by the presence of turbidity. The bottles should be held for 7 days before reporting a negative blood culture.

Remarks

1. Glucose Broth with 0.05% SPS blood culture media are for laboratory and professional use only. Not for medicinal use.
2. Do not use bottles that have cracks or defects.
3. The anticoagulant SPS exhibits less toxicity and enables bacteria to survive for a much longer period of time.
4. Inoculated bottles should be decontaminated prior to discarding. Clinical samples and microbial cultures should be considered as pathogenic biohazard and handled accordingly. Good laboratory practices and hazard precautions must be observed at all times.
5. The aerobic blood culture bottle must be vented using a sterile venting unit. Venting should be performed in a biosafety hood. Place the bottle in an upright position. Wipe the outer surface of the flip cap with an alcohol wipe. Open the flip cap and place an alcohol wipe over the septum. Insert a sterile needle with a cotton plug. This ensures adequate venting of the bottle prior to incubation. Ensure that the blood is dispersed evenly throughout the medium.
6. If growth is detected in either aerobic or anaerobic bottle, a Gram-stained smear should be prepared and appropriate subculture methods and biochemical identification tests be carried for further identification.
7. Blood drawn for culture must not be allowed to clot. If bacteria are entrapped within a clot, their presence may go undetected.

Limitations

1. Various factors like antimicrobial therapy prior to blood collection; transitory bacteremia or contamination of the patient's blood by exogenous flora and volume of blood drawn may affect the recovery of clinically significant microorganisms. Ideally, blood cultures should be done before initiation of antimicrobial therapy.
2. SPS inhibits the growth of certain strains of *Neisseria* species, *Gardnerellla vaginalis*, *Streptobacillus moniliformis* and all strains of *Peptostreptococcus anaerobius.*
3. Premature discarding of apparently negative blood cultures or infrequent observations may result in failure to detect the presence of pathogenic microorganisms or in loss of viability.
4. Culture media sometimes contain small numbers of non-viable microorganisms derived from medium constituents, which may be visible in smears of uninoculated blood culture media. Other sources of non-viable organisms visible upon Gram staining include staining reagents, immersion oil, glass slides and specimen used for inoculation.

5. A 14-day incubation period is adequate for the recovery of yeast. However, if dimorphic fungi are suspected to be present, blood cultures may require incubation for an additional two weeks.

Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

1. Clinical Diagnosis & Management by Laboratory Methods, Todd, Sanford and Davidsohn, 17th edition 1998, Edited by John Bernard Henry.
2. Diagnostic Microbiology, Bailey & Scott, 9th Edition,Ellen Jo Baron, *et al.,* Mosby 1994.
3. Blood Cultures: Where do we stand?, Laboratory Techniques, R.C. Spencer, J. Clin. Pathol 1988; 41:668-670.
4. Effect of Sodium Polyanethol Sulfonate in Blood culture, Jan Eng, Journal of Clinical Microbiology, Feb. 1975, Vol. 1, No. 2, p:119-123.
5. Effect of Volume of Blood Cultured on Detection of Bacteremia, M. Marsha Hall, *et al.,* Journal of Clinical Microbiology, June 1976, Vol. 3, No. 6, p:643-645.
6. Evaluation of the Necessity for Routine Terminal Subcultures of Previously Negative Blood Cultures, Jolynne Campbell, *et al.,* Journal of Clinical Microbiology, Oct. 1990, Vol. 12, No. 4, p: 576-578.
7. Effect of Aerobic and Anaerobic Atmospheres on Isolation of Organisms from Blood Cultures, Donna J. Blazevic, *et al.,* Journal of Clinical Microbiology, Feb. 1975, Vol. 1, No. 2, p:154-156.
8. Effects of Volume and Periodicity on Blood Cultures, James Li, *et al.,* Journal of Clinical Microbiology, Nov. 1994, Vol. 32, No. 11, p: 2829-2831.
9. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
203070130020	Glucose Broth with 0.05% SPS	20 mL
203070130050	Glucose Broth with 0.05% SPS	50 mL
203070130070	Glucose Broth with 0.05% SPS	70 mL