MECCONTI

MicroSwabs & MicroSwabPlus

USE

MicroSwabs and *MicroSwabPlus* are ready to use pellets containing stabilized viable micro-organisms. *MicroSwabs* and *MicroSwabPlus* are recommended for use in performance testing of culture media, stains, identification kits, maintenance of stock cultures and in the evaluation of bacteriological procedures.

SUMMARY & EXPLANATION

It is essential for laboratories to maintain a reliable source of stock micro-organisms for use in microbiological procedures. A source of micro-organisms with known biochemical, physiological, serological, antimicrobial susceptibility characteristics and assay values is required for quality control, education and proficiency testing.

PRINCIPLE

MicroSwabs and *MicroSwabPlus* micro-organisms are lyophilized microbial suspensions.[1-2] Micro-organisms are suspended in a preservation medium that provides protection of the cell walls during freeze-drying and subsequent extended storage. The preservation medium contains an agent to neutralize any toxic substances that may be formed during the lyophilization process. All micro-organisms are strains derived from the American Type Culture Collection and other recognized collections.

PRODUCT DESCRIPTION

Each *MicroSwab* or *MicroSwabPlus* contains of a lyophilized pellet of a single micro-organism strain inside a system containing a sterile swab and rehydration fluid for the transfer of the organism directly to culture media. Products are packaged with dessicants to prevent any adverse accumulation of moisture.

PRECAUTIONS

MicroSwabs and *MicroSwabPlus* are for in-vitro use only.

These devices, and subsequent growth of these microorganisms on culture media, are considered to be biohazard material.

MicroSwabs and *MicroSwabPlus* contain viable micro-organisms and should be used only by laboratory personnel who must be trained and experienced in bacteriological technics and processing.

The microbiology laboratory must be equipped, and have the facilities to receive, process, maintain, store and dispose of biohazard material.

After use, disposal of all biohazardous material should be decontaminate comply with the statutes of regulation for biohazard disposal.

STORAGE INSTRUCTIONS

MicroSwabs and *MicroSwabPlus* should be stored at 2-8 °C. Remove only the quantity required for immediate use.

EVIDENCE OF DETERIORATION

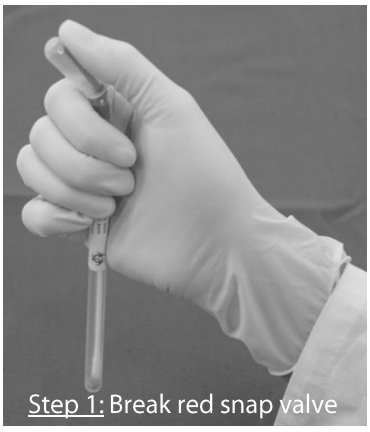
Do not use *MicroSwabs* and *MicroSwabPlus* if there is evidence of hydration of the pellet or if the expiration date has passed. Improper storage or handling which leads to abnormal accumulation of moisture or heat may render the micro-organism non-viable.

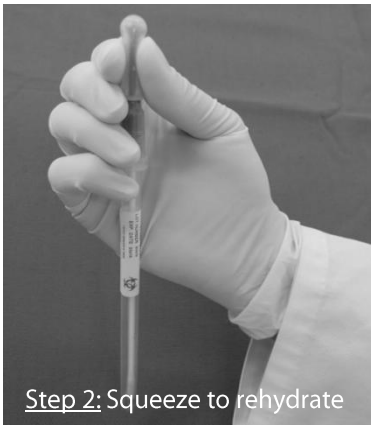
OTHER MATERIALS REQUIRED BUT NOT SUPPLIED

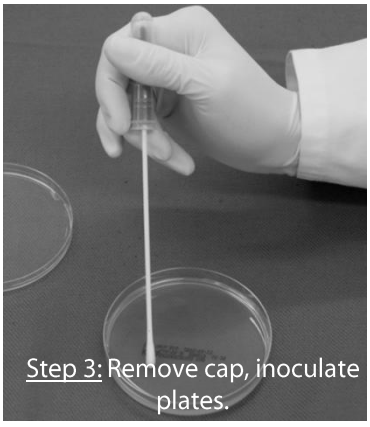
The usual microbiological laboratory equipment such as incubator, inoculating loops and for optimizing growth and recovery non-selective, nutrient or enriched agar medium are needed for procedures involving the use of this product.

PROCEDURE

1. Remove only the amount of *MicroSwabs* or *MicroSwabPlus* needed for testing. No warm up is required.
2. Break the red “snap” valve by bending to a 45° angle.
3. Gently squeeze cap until all fluid moistens the lyophilized pellet in the bottom of tube.
4. Gently shake, so swab can be saturated with the hydrated material.
5. Remove cap from tube and immediately transfer to an appropriate, non-selective medium and inoculate a circular area. To singularise colonies use a sterile loop and repeatedly streak through the inoculated area.
6. Incubate inoculated media at temperatures and atmospheric conditions appropriate for the micro-organisms.
7. Following the incubation, select representative well-isolated colonies for indicated transfers.
8.


Step 1: Break red snap valve


Step 2: Squeeze to rehydrate


Step 3: Remove cap, inoculate plates.

LIMITATIONS

Growth results may vary when directly proceed on more inhibitory or selective media.

To achieve best results for growth and recovery please refer to our Technical Information "Recommended Growth Requirements".

REFERENCES

1 Obara, Y., S. Yamai, T. Nikkawa, Y. Shimoda, and Y. Miyarnoto. 1981. Preservation and transportation of bacteria by a simple gelatin disk method. J. Clin. Microbiol. 14:61-86.

2 Monaghan, R.L.; M.M. Gagliadri, and S.L. Streicher. 1999, *In* Demain and Davies (ed.), Manual of industrial microbiology and biotechnology, 2nd ed. ASM, Washington, D.C.

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Recommended Growth Requirements

for qualitative lyophilized microorganism preparations

Introduction

When selecting growth requirements one should keep in mind that primary growth on a non-selective, agar medium is preferred. Primary growth in a fluid medium should only occur in special instances or when recommended. Because of the manipulations required during hydration, it is difficult to obtain purity of a lyophilized strain in a fluid medium. A contaminant may completely overgrow and obscure the presence of the lyophilized strain.

Descriptive of the different methods

Method	Recommended media	Incubation	Alternatives
1	**Nutrient Agar**	35°C 24-48 hours	Tryptic Soy Agar, Standard Plate Count Agar, Non-selective Sheep Blood Agar
2	**Non-selective Sheep Blood Agar**	35°C 24-48 hours	With an additional period (24 hours) of incubation : TSA, SPC, Nutrient Agar
3	**Chocolate Agar with Hemoglobin/NAD**	35°C 24-48 hours 5%-10% CO_2	
4	**Pre-reduced non-selective Sheep Blood Agar**	35°C 48-72 hours* Anaerobic	For the *Clostridium species* with an additional period (24 hours) of incubation and fresh prepared media : Tryptic Soy Agar, Standard Plate Count Agar, Nutrient agar
5	**Sabouraud Dextrose Agar**	22°C - 25°C 5-7 days	With an additional period (24 hours) of incubation : Standard Plate Count Agar, Non-selective Sheep Blood Agar
6	**Chocolate Agar with Hemoglobin/NAD**	35°C 48-72 hours Microaerophilic	Brucella with Blood Agar
7	**Buffered Charcoal Yeast Extract Agar**	35°C 3-5 days	
8	**Vaginalis Agar**	35°C 48 hours 5%-10% CO_2	
9	**** Tryptic Soy Agar**	35°C 24-48 hours	** Non-selective Sheep Blood Agar
10	Primary growth : **MRS Broth**	35°C 48 hours	
	After primary growth, transfer to : **Columbia CNA with Blood Agar**	35°C 48 hours 5% CO_2	

* Some obligate anaerobes may require 5 to 7 days to demonstrate sufficient growth.
** Rehydrate in sterile Brain Heart Infusion Broth, Tryptic Soy Broth or 0.85% Saline. Rehydration with water may result in decreased or no recovery. Rehydration with fluid provided in the MicroSwab unit provides satisfactory recovery.

Recommended growth requirements for selected strains

Acinetobacter sp. ..... Method 1
Actinomyces odonotolyticus ..... Method 4
Aerococcus sp. ..... Method 2
Aeromonas sp. ..... Method 2
Note: Nonselective Sheep Blood Agar incubated at 30°C is the best medium for primary growth of Aeromonas hydrophila. *Aeromonas salmoncida* should be incubated at 20°C to 25°C.
Alcaligenes sp. ..... Method 1
Arcanobacterium pyogenes ..... Method 2
Aspergillus sp. ..... Method 5
Bacillus sp. ..... Method 1
Note: For *Bacillus stearothermophilus* refer to Geobacillus *stearothermophilus*
Bacteroides sp. ..... Method 4
Bordetella sp. ..... Method 3
Note: Requires 3-4 days if incubation. May be incubated in Normal Environment.
Brevundimonas sp. ..... Method 1
Burkholderia sp. ..... Method 1
Campylobacter sp. ..... Method 6
Note: Best recovery for primary growth of *Campylobacter jejuni* was found with Brucella with Blood Agar. DO NOT open the inoculated agar medium Petri plate for the first 48 hours.
Candida sp. ..... Method 5
Chryseobacterium sp. ..... Method 1
Citrobacter sp. ..... Method 1
Clostridium sp. ..... Method 4
Corynebacterium sp. ..... Method 2
Cryptococcus sp. ..... Method 5
Eggerthella sp. ..... Method 4
Enterobacter sp. ..... Method 1
Enterococcus sp. ..... Method 2
Epidermophyton sp. ..... Method 5
Note: Optimal temperature for incubation is 30°C.
Erysipelothrix sp. ..... Method 2
Escherichia sp. ..... Method 1
Exiguobacterium sp. ..... Method 2
Finegoldia magna ..... Method 4
(formerly *Peptostreptococcus magnus*)
Note: Incubate 72 to 96 hours in anaerobic atmosphere.
Fusobacterium sp. ..... Method 4
Gardnerella sp. ..... Method 8
Geobacillus stearothermophilus ..... Method 1
Note: *Geobacillus stearothermophilus* strains must be incubated at 55°C.
Geotrichum sp. ..... Method 5
(formerly *Blastoschizomyces sp.*)
Haemophilus sp. ..... Method 3
Klebsiella sp. ..... Method 1
Kocuria sp. ..... Method 1
Note: *Kocuris rosea* must be incubated at 25°C for 72 hours.
Lactobacillus sp. ..... Method 2
Note: *L. acidophilus* must use Method 10
Lactococcus sp. ..... Method 2
Leclercia sp. ..... Method 1
Legionella sp. ..... Method 7
Listeria sp. ..... Method 2

Micrococcus sp. ..... Method 2
Micromonas micros ..... Method 4
(formerly *Peptostreptococcus micros*)
Note: *Micromonas micros* requires 5 to 7 days of anaerobic incubation.
Microsporum sp. ..... Method 5
Moraxella sp. ..... Method 2
Morganella sp. ..... Method 1
Myroides sp. ..... Method 1
Neisseria sp. ..... Method 3
Note: Chocolate agar is the best medium for the initial growth of *Neisseria species*. DO NOT open the inoculated agar medium Petri plate for the first 48 hours.
Nocardia sp. ..... Method 1
Oligella sp. ..... Method 2
Paenibacillusa sp. ..... Method 1
Pasteurella sp. ..... Method 1
Penicillium sp. ..... Method 5
Note: Sabouraud-2%-Dextrose is recommended over Sabouraud-4%-Dextrose. It is essential to know that growth will be need longer incubation time minimum 4 up to 10 days.
Peptoniphilus sp. ..... Method 4
Note: Incubate 72 to 96 hours in anaerobic atmosphere.
Peptostreptococcus sp. ..... Method 4
Plesiomonas sp. ..... Method 1
Porphyromonas sp. ..... Method 4
Note: 5 to 7 days of anaerobic incubation is required.
Prevotella sp. ..... Method 4
Note: Incubate during 5-7 days in anaerobic conditions.
Propionibacterium sp. ..... Method 4
Note: 72 to 96 hours of anaerobic incubation is required.
Proteus sp. ..... Method 1
Providencia sp. ..... Method 1
Pseudomonas sp. ..... Method 1
Note: *Pseudomonas fluorescens* should be incubated at 22°C to 25°C. *Pseudomonas putida* should be incubated at 30°C.

Ralstonia sp. ..... Method 1
Rhizopus sp. ..... Method 5
Rhodococcus sp. ..... Method 2
Saccharomyces sp. ..... Method 5
Note: Optimal temperature for incubation is 30°C.
Salmonella sp. ..... Method 1
Serratia sp. ..... Method 1
Shewanella sp. ..... Method 9
Shigella sp. ..... Method 1
Sphingobacterium sp. ..... Method 1
Sphingomonas sp. ..... Method 1
Note: Incubate at 22°C to 25°C
Staphylococcus sp. ..... Method 1
Stenotrophomonas sp. ..... Method 1
Streptococcus sp. ..... Method 2
Streptomyces sp. ..... Method 5
Trichophyton sp. ..... Method 5
Vibrio sp. ..... Method 9
Yarrowia sp. ..... Method 5
Yersinia sp. ..... Method 1