SFP Agar Base
Egg Yolk Enrichment 50% Antimicrobial Vial K • Antimicrobial Vial P

Intended Use
SFP Agar Base is used with Egg Yolk Enrichment 50%, Antimicrobial Vial P and Antimicrobial Vial K in detecting and enumerating *Clostridium perfringens* in foods.

Summary and Explanation
Shahidi Ferguson Perfringens (SFP) Agar Base is prepared according to the formulation of Shahidi and Ferguson. With the addition of 50% egg yolk emulsion, both the lecithinase reaction and the sulfite reaction can identify *Clostridium perfringens*. The selectivity of the medium is due to the added kanamycin and polymyxin B.

C. *perfringens* is found in raw meats, poultry, dehydrated soups and sauces, raw vegetables and other foods and food ingredients, but occurrences of foodborne illness are usually associated with cooked meat or poultry products. Spores of some strains that may resist heat during cooking germinate and grow in foods that are not adequately refrigerated. Enumerating the microorganism in food samples plays a role in the epidemiological investigation of outbreaks of foodborne illness.

SFP Agar (with added kanamycin and polymyxin B) is comparable to Tryptose Sulfite Cycloserine (TSC) Agar, which uses cycloserine as the inhibitory component.

**User Quality Control**

<table>
<thead>
<tr>
<th><strong>Identity Specifications</strong></th>
<th><strong>Difco® SFP Agar Base</strong></th>
<th><strong>Difco® Egg Yolk Enrichment 50%</strong></th>
<th><strong>Difco® Antimicrobial Vial K</strong></th>
<th><strong>Difco® Antimicrobial Vial P</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehydrated Appearance</td>
<td>Beige, free-flowing, homogeneous.</td>
<td>Canary yellow, opaque solution with a resuspendable precipitate.</td>
<td>White cake or powder.</td>
<td>White cake or powder.</td>
</tr>
<tr>
<td>Solution</td>
<td>47 g, soluble in 900 mL purified water upon boiling. Solution is medium to dark amber, slightly opalescent.</td>
<td></td>
<td>Colorless, clear solution.</td>
<td>Colorless, clear solution.</td>
</tr>
<tr>
<td>Prepared Appearance (Final)</td>
<td>Canary yellow, opaque.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Reaction of 47g/900 mL</td>
<td>pH 7.6 ± 0.2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Solution at 25°C</td>
<td></td>
<td></td>
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</tbody>
</table>

**Cultural Response**

**Difco® SFP Agar Base**
Prepare the base layer and cover layer per label directions, inoculating the base layer. Incubate at 35 ± 2°C under anaerobic conditions for 18-48 hours.

<table>
<thead>
<tr>
<th><strong>ORGANISM</strong></th>
<th><strong>ATCC</strong></th>
<th><strong>INOCULUM CFU</strong></th>
<th><strong>RECOVERY</strong></th>
<th><strong>COLONY COLOR</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Clostridium perfringens</em></td>
<td>12919</td>
<td>30-300</td>
<td>Good</td>
<td>Black with a zone of precipitation (halo)</td>
</tr>
<tr>
<td><em>Clostridium perfringens</em></td>
<td>12924</td>
<td>30-300</td>
<td>Good</td>
<td>Black with a zone of precipitation (halo)</td>
</tr>
</tbody>
</table>

**References**
Principles of the Procedure
SFP Agar Base contains peptones as sources of carbon, nitrogen, vitamins and minerals. Yeast extract supplies B-complex vitamins, which stimulate bacterial growth. Ferric ammonium citrate and sodium sulfite are H₂S indicators. Clostridia reduce sulfite to sulfide, which reacts with iron to form a black iron sulfide precipitate. Antimicrobial Vial P contains polymyxin B and Antimicrobial Vial K contains kanamycin; both are inhibitors to organisms other than Clostridium spp. Egg Yolk Enrichment 50% provides egg yolk lecithin, which some clostridia hydrolyze. Agar is the solidifying agent.

Formulae
Difco™ SFP Agar Base
Approximate Formula* Per Liter
Yeast Extract ..............................................................5.0 g
Proteose Peptone No. 3 ............................................. 7.5 g
Pancreatic Digest of Casein ........................................ 7.5 g
Soytone ...................................................................... 5.0 g
Ferric Ammonium Citrate ........................................... 1.0 g
Sodium Bisulfite ......................................................... 1.0 g
Agar .........................................................................20.0 g

Difco™ Egg Yolk Enrichment 50%  
Sterile concentrated egg yolk emulsion.

Difco™ Antimicrobial Vial K  
25 mg Kanamycin per 10 mL vial.

Difco™ Antimicrobial Vial P  
30,000 units Polymyxin B per 10 mL vial.
*Adjusted and/or supplemented as required to meet performance criteria.

Directions for Preparation from Dehydrated Product
Difco™ SFP Agar Base
Base Layer:
1. Suspend 47 g of the powder in 900 mL of purified water. Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes. Cool to 50°C.
4. Add 100 mL Egg Yolk Enrichment 50%, 10 mL of rehydrated Antimicrobial Vial P (30,000 units polymyxin B sulfate) and 4.8 mL rehydrated Antimicrobial Vial K (12 mg kanamycin). Mix thoroughly.

Cover Layer:
1. Suspend 47 g of the powder in 1 L of purified water.
2. Prepare as above, except omit Egg Yolk Enrichment 50%.
3. Test samples of the finished product for performance using stable, typical control cultures.

Difco™ Antimicrobial Vial K (Kanamycin)
1. To rehydrate, aseptically add 10 mL sterile purified water per vial.
2. Rotate in an end-over-end motion to dissolve the contents completely.

Difco™ Antimicrobial Vial P (Polymyxin B)
1. To rehydrate, aseptically add 10 mL of sterile purified water per vial.
2. Rotate in an end-over-end motion to dissolve the contents completely.

Procedure
See appropriate references for specific procedures.

Expected Results
Refer to appropriate references and procedures for results.

References

Availability
Difco™ SFP Agar Base
AOAC BAM COMPF ISO
Cat. No. 281110 Dehydrated – 500 g

Difco™ Antimicrobial Vial K
Cat. No. 233931 Vial – 6 × 10 mL*

Difco™ Antimicrobial Vial P
Cat. No. 232681 Vial – 6 × 10 mL*

Difco™ Egg Yolk Enrichment 50%
AOAC BAM COMPF
Cat. No. 233471 Bottle – 12 × 10 mL*
233472 Bottle – 6 × 100 mL*
*Store at 2-8°C.

SIM Medium

Intended Use
SIM Medium is used to differentiate enteric bacilli on the basis of sulfide production, indole formation and motility.

Summary and Explanation
Hydrogen sulfide production, indole formation and motility are distinguishing characteristics which aid in the identification of the Enterobacteriaceae, especially Salmonella and Shigella. SIM Medium, therefore, is useful in the process of identification of enteric pathogens.

Principles of the Procedure
The ingredients in SIM Medium enable the determination of three activities by which enteric bacteria can be differentiated. Sodium thiosulfate and ferrous ammonium sulfate are indicators of hydrogen sulfide production. The ferrous ammonium sulfate reacts with H₂S gas to produce ferrous sulfide, a black precipitate.¹ The casein peptone is rich in tryptophan, which is attacked by certain microorganisms resulting in the production of indole. The indole is detected by the addition of chemical