

# Universal Preenrichment Broth

## Intended Use

Universal Preenrichment Broth is used for recovering sublethally injured *Salmonella* and *Listeria* from food products.

## Summary and Explanation

Traditional methods for recovering *Salmonella* and *Listeria* from food products require separate preenrichment media for each microorganism.<sup>1, 2</sup> Some broth media recommended for preenrichment contain antibiotic inhibitors<sup>3</sup> or have insufficient buffering capacity which hinder recovery of sublethally injured cells.<sup>3-5</sup>

Bailey and Cox<sup>3</sup> formulated Universal Preenrichment Broth to permit simultaneous resuscitation of sublethally injured

*Salmonella* and *Listeria*. The broth medium provides sufficient buffering capacity to prevent rapid decreases in pH and allows for repair of injured cells that might be sensitive to low pH values or inhibitory substances.

## Principles of the Procedure

Universal Preenrichment Broth contains peptones as sources of carbon, nitrogen, vitamins and minerals. Sodium and potassium phosphates buffer the medium. Sodium chloride maintains the osmotic balance of the medium. Magnesium sulfate and ferric ammonium citrate provide essential ions. Dextrose is an energy source. Sodium pyruvate helps stimulate the metabolism of stressed organisms.

## User Quality Control

### Identity Specifications

#### Difco™ Universal Preenrichment Broth

Dehydrated Appearance: Light beige, free-flowing, homogeneous.

Solution: 3.8% solution, soluble in purified water. Solution is light to medium amber, slightly opalescent to opalescent, may have a precipitate.

Prepared Appearance: Light to medium amber, slightly opalescent to opalescent, may have a precipitate.

Reaction of 3.8%  
Solution at 25°C: pH 6.3 ± 0.2

### Cultural Response

#### Difco™ Universal Preenrichment Broth

Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-24 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Listeria monocytogenes</i>	19115	10-10 <sup>2</sup>	Good
<i>Salmonella enterica</i> subsp. <i>enterica</i> serotype Enteritidis	13076	10-10 <sup>2</sup>	Good
<i>Salmonella enterica</i> subsp. <i>enterica</i> serotype Typhimurium	14028	10-10 <sup>2</sup>	Good
Uninoculated			



## Formula

### Difco™ Universal Preenrichment Broth

Approximate Formula* Per Liter	
Pancreatic Digest of Casein .....	5.0 g
Proteose Peptone .....	5.0 g
Monopotassium Phosphate .....	15.0 g
Disodium Phosphate .....	7.0 g
Sodium Chloride .....	5.0 g
Dextrose .....	0.5 g
Magnesium Sulfate .....	0.25 g
Ferric Ammonium Citrate .....	0.1 g
Sodium Pyruvate .....	0.2 g

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

## Directions for Preparation from Dehydrated Product

1. Suspend 38 g of the powder in 1 L of purified water. Mix thoroughly.
2. Autoclave at 121°C for 15 minutes.
3. Test samples of the finished product for performance using stable, typical control cultures.

## Procedure

Procedures for the preenrichment of *Salmonella* and *Listeria* are provided in appropriate references.<sup>1,2</sup>

## Expected Results

*Salmonella* and *Listeria* demonstrate good growth and recovery following preenrichment in this broth.

## References

1. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
2. U.S. Food and Drug Administration. 2001. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
3. Bailey and Cox. 1992. J. Food Prot. 55:256.
4. Bailey, Fletcher and Cox. 1990. J. Food Prot. 53:473.
5. Juven, Cox, Bailey, Thomson, Charles and Shutze. 1984. J. Food Prot. 47:299.

## Availability

### Difco™ Universal Preenrichment Broth

**CCAM**

Cat. No. 223510 Dehydrated – 500 g