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INTENDED USE

BD Difco™ Fraser Broth Supplement is used with BD Difco Fraser Broth Base in selectively enriching and detecting *Listeria*.

SUMMARY AND EXPLANATION

First described in 1926 by Murray, Webb and Swann,¹ *Listeria monocytogenes* is a widespread problem in public health and the food industries. This organism has the ability to cause human illness and death, particularly in immunocompromised individuals and pregnant women.² The first reported food-borne outbreak of listeriosis was in 1985,³ and since then, microbiological and epidemiological evidence from both sporadic and epidemic cases of listeriosis has indicated that the principle route of transmission is via the consumption of foods contaminated with *L. monocytogenes*.⁴

Implicated vehicles of transmission include turkey frankfurters,⁵ coleslaw, pasteurized milk, Mexican-style cheese, paté, and pickled pork tongue. The organism has been isolated from commercial dairy and other food processing plants, and is ubiquitous in nature, being present in a wide range of unprocessed foods as well as in soil, sewage, silage and river water.⁶

BD Difco Fraser Broth Base and BD Difco Fraser Broth Supplement are based on the formulation of Fraser and Sperber.⁷ The medium is used in the rapid detection of *Listeria* from food⁸ and environmental samples.

Many common food contaminants such as streptococci, enterococci, *Bacillus* spp., *Escherichia coli*, *Pseudomonas aeruginosa* and *Proteus vulgaris* interfere with the isolation of *L. monocytogenes*.⁹

Listeria species grow on laboratory media over a pH range of 4.4–9.6, and can survive in foods of similar acidity for days or weeks.¹⁰ *Listeria* spp. are microaerophilic, gram-positive, asporogenous, non-encapsulated, non-branching, regular, short, motile rods. Motility is most pronounced at 20 °C.

Identification of *Listeria* is based on successful isolation of the organism, biochemical characterization and serological confirmation.

PRINCIPLES OF THE PROCEDURE

Differentiation of *Listeria* from other bacteria, is aided by including ferric ammonium citrate (BD Difco Fraser Broth Supplement) in the final medium. Since all *Listeria* species hydrolyze esculin, the addition of ferric ions to the medium will detect the reaction. A blackening of the medium by cultures containing esculin-hydrolyzing bacteria is the result of the formation of 6,7-dihydroxycoumarin which reacts with the ferric ions.⁷

REAGENTS

BD Difco Fraser Broth Supplement

Approximate Formula* Per 10 mL

Ferric Ammonium Citrate 0.5 g

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

Warnings and Precautions:

For Laboratory Use

Consult product labels and material safety data sheets for safety information and first aid.

Follow proper, established laboratory procedures in handling and disposing of infectious materials.

Warning



H315 Causes skin irritation. **H319** Causes serious eye irritation. **H335** May cause respiratory irritation.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray **P280** Wear protective gloves/protective clothing/eye protection/face protection. **P264** Wash thoroughly after handling. **P271** Use only outdoors or in a well-ventilated area. **P305+P351+P338** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **P321** Specific treatment (see on this label). **P304+P340** IF INHALED: Remove person to fresh air and keep comfortable for breathing. **P312** Call a POISON CENTER/doctor if you feel unwell. **P332+P313** If skin irritation occurs: Get medical advice/attention. **P337+P313** If eye irritation persists: Get medical advice/attention. **P302+P352** IF ON SKIN: Wash with plenty of water. **P362+P364** Take off contaminated clothing and wash it before reuse. **P405** Store locked up. **P403+P233** Store in a well-ventilated place. Keep container tightly closed. **P501** Dispose of contents/container in accordance with local/regional/national/international regulations.

Instructions:

Store BD Difco Fraser Broth Supplement at 2–8 °C.

PROCEDURE

Material Provided: BD Difco Fraser Broth Supplement.

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

Test Procedure: Observe aseptic techniques.

Aseptically add 10 mL of BD Difco Fraser Broth Supplement to 1 L BD Difco Fraser Broth Base prepared according to label directions. To isolate *L. monocytogenes* from processed meats and poultry, the following procedure is recommended by the U.S. Department of Agriculture.⁸

1. Add 25 g of test material to 225 mL of UVM Modified Listeria Enrichment Broth and mix or blend thoroughly.
2. Incubate for 20–24 h at 30 °C.
3. Transfer 0.1 mL of the incubated broth to Fraser Broth. Incubate at 35 °C for 26 ± 2 h.
4. At 24 and 48 h, streak the Fraser Broth culture to Modified Oxford Agar.
5. Incubate the Modified Oxford plates at 35 °C for 24–48 h.

USER QUALITY CONTROL**Identity Specifications**

Solution Appearance: Dark brown solution

Cultural Response

Prepare BD Difco Fraser Broth Base per label directions. Add BD Difco Fraser Broth Supplement. Inoculate and incubate at 35 ± 2 °C and read for growth and blackening at 18–24 and 42–48 h.

ORGANISM	ATCC®	INOCULUM CFU	RECOVERY	ESCULIN REACTION
<i>Enterococcus faecalis</i>	29212	10 ³ –2 x 10 ³	Marked to complete inhibition	–
<i>Escherichia coli</i>	25922	10 ³ –2 X 10 ³	Marked to complete inhibition	–
<i>Listeria monocytogenes</i>	19114	10 ² –10 ³	Good	+
<i>Listeria monocytogenes</i>	19115	10 ² –10 ³	Good	+
<i>Staphylococcus aureus</i>	25923	10 ³ –2 x 10 ³	Marked to complete inhibition	–

RESULTS

1. Examine agar plates for suspect colonies. For further identification and confirmation of *Listeria* spp., consult appropriate references.^{8,10-12}
2. Rapid slide and macroscopic tube tests can be used for definitive serological identification.

LIMITATIONS OF THE PROCEDURE

1. Since *Listeria* species other than *L. monocytogenes* can grow on these media, an identification of *L. monocytogenes* must be confirmed by biochemical and serological testing.^{11,12}
2. Poor growth and a weak esculin reaction may be seen after 40 h incubation for some enterococci.

AVAILABILITY

Cat. No.	Description
211742	BD Difco Fraser Broth Supplement, 6 x 10 mL.
211767	BD Difco Fraser Broth Base, 500 g.
211766	BD Difco Fraser Broth Base, 2 kg.
222530	BD Difco Oxford Medium Base, 500 g.
222510	BD Difco Oxford Medium Base, 2 kg.
211763	BD Difco Modified Oxford Antimicrobial Supplement, 6 x 10 mL.
222120	BD Difco LPM Agar Base, 500 g.
222110	BD Difco LPM Agar Base, 2 kg.
222220	BD Difco Listeria Enrichment Broth, 500 g.
222210	BD Difco Listeria Enrichment Broth, 10 kg.
222330	BD Difco UVM Modified Listeria Enrichment Broth, 500 g.
222310	BD Difco UVM Modified Listeria Enrichment Broth, 2 kg.
222320	BD Difco UVM Modified Listeria Enrichment Broth, 10 kg.
223001	BD Difco Listeria O Antiserum, Type 1, 1 mL.
223011	BD Difco Listeria O Antiserum, Type 4, 1 mL.
223021	BD Difco Listeria O Poly Types, 1 & 4, 1 mL.

REFERENCES

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Technical Information: In the United States contact BD Technical Service and Support at 1.800.638.8663 or www.bd.com.



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YYYY-MM-DD / YYYY-MM (MM = end of month)
 ГГГГ-ММ-ДД / ГГГГ-ММ (ММ = края на месеца)
 RRRR-MM-DD / RRRR-MM (MM = koniec miesiąca)
 AAAA-MM-DD / AAAA-MM (MM = slutning af måned)
 JJJJ-MM-TT / JJJJ-MM (MM = Monatsende)
 EEEE-MM-HH / EEEE-MM (MM = τέλος του μήνα)
 AAAA-MM-DD / AAAA-MM (MM = fin del mes)
 AAAA-KK-PP / AAAA-KK (KK = kuu lõpp)
 AAAA-MM-JJ / AAAA-MM (MM = fin du mois)
 GGGG-MM-DD / GGGG-MM (MM = kraj mjeseca)
 ÉÉÉÉ-HH-NN / ÉÉÉÉ-HH (HH = hónap utolsó napja)
 AAAA-MM-GG / AAAA-MM (MM = fine mese)
 ЖЖЖЖ-АА-КК / ЖЖЖЖ-АА / (АА = айдың соңы)
 YYYY-MM-DD/YYYY-MM (MM = 월말)
 MMMM-MM-DD / MMMM-MM (MM = mėnesio pabaiga)
 GGGG-MM-DD/GGGG-MM (MM = mėneša beigas)
 JJJJ-MM-DD / JJJJ-MM (MM = einde maand)
 AAAA-MM-DD / AAAA-MM (MM = sluttan av måneden)
 RRRR-MM-DD / RRRR-MM (MM = koniec miesiąca)
 AAAA-MM-DD / AAAA-MM (MM = fim do mês)
 AAAA-LL-ZZ / AAAA-LL (LL = sfârșitul lunii)
 ГГГГ-ММ-ДД / ГГГГ-ММ (ММ = конец месяца)
 RRRR-MM-DD / RRRR-MM (MM = koniec miesiąca)
 GGGG-MM-DD / GGGG-MM (MM = kraj meseca)
 AAAA-MM-DD / AAAA-MM (MM = slutet av månaden)
 YYYY-AA-GG / YYYY-AA (AA = ayın sonu)
 PPPP-MM-DD / PPPP-MM (MM = кінець місяця)
 YYYY-MM-DD / YYYY-MM (MM = 月末)

REF

Catalog number / Каталоген номер / Katalogové číslo / Katalognummer / Αριθμός καταλόγου / Número de catálogo / Katalooginumber / Numéro catalogue / Kataloški broj / Katalogsszám / Numero di catalogo / Каталог номер / 카탈로그 번호 / Katalogo / numeris / Kataloga numurs / Catalogus nummer / Numer katalogowy / Număr de catalog / Номер по каталогу / Katalogové číslo / Kataloški broj / Katalog numarası / Номер за каталогом / 目录号



Temperature limitation / Температурни ограничения / Teplotní omezení / Temperaturbegrænsning / Temperaturbegrenzung / Περιορισμοί θερμοκρασίας / Limitación de temperatura / Temperatuuri piirang / Limites de température / Dozvoljena temperatura / Hőmérsékleti határ / Limiti di temperatura / Температураны шектеу / 온도 제한 / Laikymo temperatūra / Temperatūros ierobežojimai / Temperatuurlimiet / Temperaturbegrænsning / Ograniczenie temperatury / Limites de temperatura / Limite de temperatură / Ограничение температуры / Ochraničenie teploty / Ograničenje temperature / Temperaturgräns / Sıcaklık sınırlaması / Обмеження температури / 温度限制

LOT

Batch Code (Lot) / Код на партидата / Kód (číslo) šarže / Batch-kode (lot) / Batch-Code (Charge) / Κωδικός παρτίδας (παρτίδα) / Código de lote (lote) / Partii kood / Numéro de lot / Lot (kod) / Tétel száma (Lot) / Codice batch (lotto) / Топтама коды / 배치 코드(로트) / Partijos numeris (LOT) / Partijas kods (laidiens) / Lot nummer / Batch-kode (parti) / Kod partii (seria) / Código do lote / Cod de serie (Lot) / Код партии (лот) / Kód série (šarža) / Kod serije / Partinummer (Lot) / Parti Kodu (Lot) / Код партии / 批号 (亚批)



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Keep away from light / Пазете от светлина / Nevystavujte světlu / Må ikke udsættes for lys / Vor Licht schützen / Κρατήστε το μακριά από το φως / Mantener alejado de la luz / Hoida eemal valgusest / Conserver à l'abri de la lumière / Držati dalje od svetla / Fény nem érheti / Tenere al riparo dalla luce / Қараңғыланған жерде ұста / 빛을 피해야 함 / Laikyti atokiau nuo šilumos šaltinių / Sargāt no gaismas / Niet blootstellen aan zonlicht / Må ikke utsettes for lys / Przechowywać z dala od źródła światła / Manter ao abrigo da luz / Feriți de lumină / Хранити в темноті / Uchovávajte mimo dosahu svetla / Držite dalje od svetlosti / Får ej utsättas för ljus / İşıktan uzak tutun / Берегти від дії світла / 请远离光线

Change History

Revision/Date	Section	Change Summary
(03) 2019-03	All	Updated BD Branding
	Warning	Added precautionary codes and statements.
	Back page	Updated trademark line.



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