

Technical Data Sheet

GranuCult™

FRASER Broth (Base)

acc. ISO 11290

Ordering number: 1.10398.0500

For the primary and secondary selective enrichment of *Listeria spp.* from food and animal feed as well as from environmental samples and other materials.

This culture medium complies with the specifications given by EN ISO 11290 and APHA.

Mode of Action

The high nutrient content and the large buffer capacity creates optimum growth conditions for *Listeria*. The growth of accompanying bacteria is largely inhibited by lithium chloride, nalidixic acid and acriflavine hydrochloride. The detection of the β -D-glucosidase activity is possible by the addition of aesculin and ammonium iron(III) citrate forming a black complex of aesculin iron(III) ions. But this reaction is not exclusive to *Listeria spp.*, so that following EN ISO 11290-1, every primary and secondary enrichment in Fraser broth has to be sub-cultured on selective plating media.

From GranuCult™ FRASER Broth (Base) acc. ISO 11290, the primary selective enrichment Half Fraser broth as well as the secondary enrichment Fraser broth can be prepared by addition of Ammonium iron(III) citrate supplement (article number 1.00092.0010) and Selective Supplement (article number 1.00093.0010).

Typical Composition

Specified by ISO 11290			GranuCult™ FRASER Broth acc. ISO 11290		
	Half Fraser	Fraser		Half FRASER	FRASER
Enzymatic Digest of Animal Tissues	5 g/l		Enzymatic Digest of Animal Tissues	5 g/l	
Enzymatic Digest of Casein	5 g/l		Enzymatic Digest of Casein	5 g/l	
Meat Extract	5 g/l		Meat Extract	5 g/l	
Yeast Extract	5 g/l		Yeast Extract	5 g/l	
NaCl	20 g/l		NaCl	20 g/l	
Na ₂ HPO ₄ x 2 H ₂ O	12 g/l		Na ₂ HPO ₄ , anhydrous*	9.6 g/l	
KH ₂ PO ₄	1.35 g/l		KH ₂ PO ₄	1.35 g/l	
Aesculin	1 g/l		Aesculin	1 g/l	
LiCl	3 g/l		LiCl	3 g/l	
Water	1000 ml/l		Water	n/a	
pH at 25 °C	7.2 ± 0.2		pH at 25 °C	7.2 ± 0.2	
Supplements added after autoclaving:					
Acriflavine Hydrochloride	0.0125 g/l	0.025 g/l	Acriflavine Hydrochloride	0.0125 g/l	0.025 g/l
Nalidixic Acid Sodium Salt	0.01 g/l	0.02 g/l	Nalidixic Acid Sodium Salt	0.01 g/l	0.02 g/l
Ammonium Iron (III) Citrate	0.5 g/l	0.5 g/l	Ammonium Iron (III) Citrate	0.5 g/l	0.5 g/l

* equivalent to 12 g/l Na₂HPO₄ x 2 H₂O

Preparation

Dissolve 27.5 g in 500 ml of purified water. Autoclave 15 min at 121 °C.

To prepare half-concentrated Fraser broth, dissolve the contents of a vial of Ammonium iron(III) citrate supplement (article number 1.00092.0010) and a vial of Selective Supplement (article number 1.00093.0010) each in 1 ml of sterile purified water each and add them to the broth base after it has cooled to below 50 °C.

Fraser broth is made by adding a further bottle of Selective Supplement (article number 1.00093.0010) to the half-concentrated Fraser broth.

The supplements are homogeneously distributed in the broth by carefully swirling.

The prepared medium is clear to almost clear and yellowish-brown.

Experimental Procedure and Evaluation

Depend on the purpose for which the medium is used.

Incubate for the primary enrichment step the inoculated Half Fraser broth under aerobic conditions, e.g. acc. to EN ISO 11290-1 at 29-31 °C for 22-26 h.

Transfer 0.1 ml material from the resulting culture (regardless of its color) to the secondary enrichment culture medium, e.g. 10 ml Fraser broth, following the method given EN ISO 11290-1.

Incubate for the secondary enrichment step the inoculated Fraser broth under aerobic conditions, e.g. acc. to EN ISO 11290-1 at 36-38 °C for 46-50 h.

From the culture obtained in the primary and the secondary enrichment culture selective solid media are inoculated, see details given by EN ISO 11290-1.

Storage

Store at +15 °C to +25 °C, dry and tightly closed. Do not use clumped or discolored medium. Protect from UV light (including sun light). For *in vitro* use only.

According Corry et al. (2012), self-prepared basal medium can be stored in closed containers at +2 °C to +8 °C in the dark and protected against evaporation for up to 14 days. Self-prepared complete medium should be used immediately after addition of the supplements

Quality Control

Function	Control strains	Incubation	Method of control	Criteria	Expected results
Performance test as Half-concentrated Fraser broth in accordance with the current version of EN ISO 11133					
Productivity	<i>Listeria monocytogenes</i> 1/2a ATCC® 35152 + <i>Escherichia coli</i> ATCC® 25922 + <i>Enterococcus faecalis</i> ATCC® 29212	22-26 h at 29-31 °C	Qualitative	>10 colonies on Agar Listeria according to Ottaviani and Agosti	Blue-green colonies with opaque halo on Listeria agar acc. OTTAVIANI and AGOSTI acc. ISO 11290
	<i>Listeria monocytogenes</i> 4b ATCC® 13932 + <i>Escherichia coli</i> ATCC® 8739 + <i>Enterococcus faecalis</i> ATCC® 19433				

Function	Control strains	Incubation	Method of control	Criteria	Expected results
Selectivity	<i>Escherichia coli</i> ATCC® 8739	22-26 h at 29-31 °C		Total inhibition on Tryptic Soy Agar (TSA)	-
	<i>Escherichia coli</i> ATCC® 25922				
	<i>Enterococcus faecalis</i> ATCC® 19433			< 100 colonies on Tryptic Soy Agar (TSA)	
	<i>Enterococcus faecalis</i> ATCC® 29212				

Please refer to the actual batch related Certificate of Analysis.

Function	Control strains	Incubation	Method of control	Criteria	Expected results
Performance test as Fraser broth in accordance with the current version of EN ISO 11133					
Productivity	<i>Listeria monocytogenes</i> 1/2a ATCC® 35152 + <i>Escherichia coli</i> ATCC® 25922 + <i>Enterococcus faecalis</i> ATCC® 29212	46-50 h at 36-38 °C	Qualitative	>10 colonies on Agar Listeria	Blue-green colonies with opaque halo on Listeria agar acc. OTTAVIANI and AGOSTI acc. ISO 11290
	<i>Listeria monocytogenes</i> 4b ATCC® 13932 + <i>Escherichia coli</i> ATCC® 8739 + <i>Enterococcus faecalis</i> ATCC® 19433			according to Ottaviani and Agosti	
Selectivity	<i>Escherichia coli</i> ATCC® 8739	46-50 h at 36-38 °C		Total inhibition on Tryptic Soy Agar (TSA)	-
	<i>Escherichia coli</i> ATCC® 25922				
	<i>Enterococcus faecalis</i> ATCC® 19433			< 100 colonies on Tryptic Soy Agar (TSA)	
	<i>Enterococcus faecalis</i> ATCC® 29212				

Please refer to the actual batch related Certificate of Analysis.

Literature

APHA (2015): Compendium of Methods for the Microbiological Examination of Foods. 5th ed. American Public Health Association, Washington, D.C.

Beumer, R.R. and Curtis, G.D.W. (2012): Culture media and Methods for the isolation of *Listeria monocytogenes*. In: Handbook of Culture Media for Food and Water Microbiology. (Corry, J.E.L., Curtis, G.D.W. and Baird, R.M. eds). pp. 115-129. Royal Society of Chemistry, Cambridge, UK.

Corry, J.E.L., Curtis, G.D.W. and Baird, R.M. (2012): Handbook of Culture Media for Food and Water Microbiology, pp. 762-764. Royal Society of Chemistry, Cambridge, UK.

Fraser, J. A. and Sperber, W. H. (1988): Rapid detection of *Listeria spp.* in food and environmental samples by esculin hydrolysis. J. Food Prot. **51**: 762-765.

ISO International Standardisation Organisation. Microbiology of food and animal feeding stuffs -- Horizontal method for the detection and enumeration of *Listeria monocytogenes* - Part 1: Detection method -- Amendment 1: Modification of the isolation media and the haemolysis test, and inclusion of precision data. EN ISO 11290-1:1998 + Amd 1:2004.

ISO International Standardisation Organisation. Microbiology of food, animal feed and water - Preparation, production, storage and performance testing of culture media. EN ISO 11133:2014.

Ordering Information

Product	Cat. No.	Pack size	Other pack sizes available
GranuCult™ FRASER Broth (Base) acc. ISO 11290	1.10398.0500	500 g	
FRASER Listeria Selective Supplement	1.00093.0010	10 x 1 vial	
FRASER Listeria Ammonium Iron (III) Supplement	1.00092.0010	10 x 1 vial	
ReadyTube™ 10 Fraser ISO 11290	1.46208.0020	20 x 10 ml	100 x 10 ml
GranuCult™ Half FRASER (Demi FRASER) Broth (Base) with Antibiotics acc. ISO 11290	1.00025.0500	500 g	
Readybag® Half FRASER (Demi FRASER) Broth with Supplements acc. ISO 11290, 12.5 g, irradiated	1.02449.0060	60 bags	35 x 62 g bags
ReadyTube™ 2000 Half Fraser ISO 11290	1.46646.0001	2000 ml bag	6 x 225 ml
Chromocult® Listeria Agar (Base) acc. OTTAVIANI and AGOSTI acc. ISO 11290	1.00427.0500	500 g	
Chromocult® Listeria Agar Enrichment Supplement	1.00439.0010	10 x 1 vial	
Chromocult® Listeria Agar Selective Supplement	1.00432.0010	10 x 1 vial	
ReadyPlate™ CHROM Listeria Agar ISO 11290	1.46186.0020	20 x 90 mm	100 x 90 mm
Oxford-Listeria-Selective Agar (Base)	1.07004.0500	500 g	
Oxford-Listeria-Selective Supplement	1.07006.0010	10 x 1 vial	
Oxford Listeria Selective Agar	1.46328.0020	20 pcs	

Product	Cat. No.	Pack size	Other pack sizes available
PALCAM Listeria-Selective Agar (Base) acc. to VAN NETTEN et al.	1.11755.0500	500 g	
PALCAM Listeria Selective-Supplement acc to van Netten et al	1.12122.0010	10 x 1 vial	
PALCAM Listeria Selective Agar	1.46329.0020	20 pcs	
L-PALCAM-Listeria Selective Enrichment Broth (Base) acc to van Netten et al.	1.10823.0500	500 g	
Singlepath® Listeria	1.04142.0001	25 tests	
Singlepath® L' mono	1.04148.0001	25 tests	
ReadyTube™ 9 BPW ISO 6579, 6887, 21528	1.46142.0020	20 x 9 ml	100 x 9 ml, 6 x 225 ml, 6 x 1000 ml, 1 x 2000 ml

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