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FRASER Listeria Selective Enrichment Broth (base)

For the selective enrichment of Listeria in the 2-step method acc. to D.G.AL. and ISO 11290-1 (1996).

Mode of Action

Optimum growth conditions are created for Listeria due to the high nutrient content and the large buffer capacity. The growth of accompanying bacteria is largely inhibited by lithium chloride, nalidixic acid and acriflavine hydrochloride. The detection of the

β-D-glucosidase activity of Listeria is possible by the addition of esculin and amonium iron(III) citrate. The glucose esculin is cleaved by β-D-glucosidase into esculetin and glucose. The esculetin then forms an olive-green to black complex with the iron(III) ions. Therefore, during the growth of Listeria in FRASER broth, usually a blackening of the broth is observed. An improved enrichment of Listeria in comparison with the standard method can be attained using the two-step enrichment method with an initially halved concentration of nalidixic acid and acriflavine hydrochloride.

Typical Composition (g/litre)

Proteose peptone 5.0; peptone from casein 5.0; yeast extract 5.0; meat extract 5.0; sodium chloride 20.0; disodium hydrogen phosphate 9.6; potassium dihydrogen phosphate 1.35; esculin 1.0; lithium chloride 3.0.

Preparation

Suspend 55.0 g in 1 litre demin. water and autoclave (15 min at 121 °C). To prepare half-concentraded FRASER broth, dissolve the contents of 1 vial amonium iron(III) citrate and 1 vial of selective supplement (Cat. No. 1.10399.0001 FRASER Supplement) in 1 ml of sterile distilled water each and add to the broth after it has cooled below 50 °C. FRASER broth is made by adding a further bottle of selective supplement to the half-concentrated FRASER broth. The supplements are homogeneously distributed in the broth by carefully swirling.

pH: 7.2 ± 0.2 at 25 °C.

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

Application

1. Enrichment step

The half-concentrated FRASER broth is inoculated with sample material and incubated at 30 °C for 24 ± 3 hours. From this culture, a selective growth medium such as OXFORD or PALCAM Agar is inoculated.

2. Enrichment step

From the first enrichment step, 0.1 ml is inoculated on to 10 ml FRASER broth for two incubations of 48 ± 3 hours at 35 °C or 37 °C. After each 24 hours period selective growth media such as OXFORD and/or PALCAM agar are inoculated.

Literature

Direction General de l'Alimentation: D.G.AL./SDHA/N93/No 8105 du 24-06-1993.

ISO 11290-1: Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of Listeria monocytogenes - Part 1: Detection method (1996).

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

Ordering Information

Product	Merck Cat. No.	Pack size
FRASER Listeria Selective Enrichment Broth (base)	1.10398.0500	500 g
FRASER Listeria Supplement (antibiotic mixture + ammonium iron (III) citrate)	1.10399.0001	2 x 8 vials
OXFORD Listeria Selective Agar (Base)	1.07004.0500	500 g
OXFORD Listeria Selective Supplement	1.07006.0001	1 x 13 vials
PALCAM Listeria Selective Agar (Base)	1.11755.0500	500 g
PALCAM Listeria Selective Supplement acc. to VAN NETTEN et al.	1.12122.0001	1 x 16 vials
Singlepath® Listeria	1.04142.0001	25 tests

Quality control

Test strains	1. Enrichment step Growth	2. Enrichment step Blackening	Singlepath® Listeria
Listeria monocytogenes ATCC 19111	> 1 x 10^4	+	+
Listeria monocytogenes (NCTC 7973) ATCC 35152	> 1 x 10^4	+	+
Listeria monocytogenes ATCC 13932	> 1 x 10^4	+	+
Listeria innocua ATCC 33090	> 1 x 10^4	+	+
Enterococcus faecalis ATCC 19433	< 1 x 10^3		-
Staphylococcus aureus ATCC 25923	< 1 x 10^3		-