Technical Data Sheet

GranuCult®

BAIRD-PARKER Agar (Base)

acc. ISO 6888 and FDA-BAM

Ordering number: 1.05406.0500

For the isolation, presumptive identification and enumeration of *Staphylococcus aureus* from food and animal feed as well as from other materials.

This culture medium complies with the specifications given by EN ISO 6888, FDA-BAM and APHA.

Mode of Action

This medium attains its selectivity with potassium chloride, lithium chloride and glycine. Sodium pyruvate is essential to both recovery of damaged *Staphylococcus aureus* cells and their subsequent growth. Agar is the solidifying agent.

With added egg yolk tellurite emulsion, coagulase-positive staphylococci form black or grey colonies due to tellurite reduction with or without egg yolk reaction. Egg-yolk reaction is shown by characteristic zones and rings formed as a result of lipolysis and/or proteolysis.

According EN ISO 6888-1, the addition of sulfamethazine is advised to suppress the growth and swarming of *Proteus spp*. if these are suspected in the test sample.

Typical Composition

Specified by ISO 6888		FDA BAM M17		GranuCult® BAIRD-PARKER Agar acc. ISO 6888 and FDA-BAM	
Pancreatic Digest of Casein	10 g/l	Tryptone	10 g/l	Enzymatic Digest of Casein*	10 g/l
Meat Extract	5 g/l	Beef Extract	5 g/l	Meat Extract**	5 g/l
Yeast Extract	1 g/l	Yeast Extract	1 g/l	Yeast Extract	1 g/l
Sodium Pyruvate	10 g/l	Sodium Pyruvate	10 g/l	Sodium Pyruvate	10 g/l
L-Glycine	12 g/l	Glycine	12 g/l	Glycine	12 g/l
Lithium Chloride	5 g/l	Lithium Chloride x 6 H_2O	5 g/l	Lithium Chloride	5 g/l
Agar	12-22 g/l	Agar	20 g/l	Agar-Agar***	15 g/l
Water	950 ml/l	Water	950 ml/l	Water	n/a

Supplements acc. to EN ISO 6888-1/-3:					
Potassium Tellurite	0.01 g/l	Egg yolk-Tellurite Solution (contains 0.01 g/50 ml Potassium Tellurite)	50 ml	Egg Yolk-Tellurite solution (contains 0.01 g/50 ml Potassium Tellurite)	50 ml*****
20 % Egg Y olkEmulsion	50 ml				
pH at 25 °C	-****	pH at 25 °C	-****	pH at 25 °C	6.8 ± 0.2

* Enzymatic digest of casein is equivalent to tryptone.

** Meat extract is equivalent to beef extract.

*** Agar-Agar is equivalent to other different terms of agar.

**** EN ISO 6888 and FDA-BAM specify no final pH for Baird-Parker agar after supplementation, only for the base medium (7.0 ± 0.2 at 25 °C).

***** EN ISO 6888 states that for usage of a commercial egg yolk emulsion, the concentration should be used according to the manufacturer's instruction.

Preparation

Dissolve 58 g in 950 ml of purified water. Heat in boiling water and agitate frequently until completely dissolved. Autoclave 15 minutes at 121 °C.

At 50 °C to 45 °C and under sterile conditions, add 50 ml of Egg yolk tellurite emulsion and if required, 50 mg/l of sulfamethazine. Mix well and pour plates.

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

There should be no visible moisture on the plates before use. When moisture is present, the plates should be dried for the minimum time required to remove visible moisture, following the procedure as described by EN ISO 11133.

Experimental Procedure and Evaluation

Depend on the purpose for which the medium is used.

Following the procedure for direct enumeration given by EN ISO 6888-1, inoculate by means of a sterile pipette with 0.1 ml of the test sample or the initial dilution on each BAIRD-PARKER agar plate. Repeat for further dilution if necessary.

Carefully spread the inoculum as quickly as possible over the surface of the agar plate, trying not to touch the sides of the dish, using a spreader. Allow the plates to dry with their lids on for about 15 min at the laboratory temperature.

Invert the inoculated plates and incubate them for 22-26 h, then re-incubate for a further 22-26 h at 34-36 °C or 36-38 °C.

After incubation for 22-26 h, mark the bottom of the plates the position of any typical colonies present-

Re-incubate all plates at 34-36 °C or 36-38 °C for a further 22-26 h and mark all any new typical colonies.

Also mark any atypical colonies present.

Following the procedure for enumeration and detection by MPN given by EN ISO 6888-3, inoculate BAIRD-PARKER agar plates by subculturing the selective enrichment in Granucult® GIOLITTI-CANTONI broth acc. ISO 6888 (article number 1.10675.0500).

For spreading, preparation of the inoculated plates and incubation follow the instructions as given above.

For enumeration and confirmation follow the procedure e.g. given by EN ISO 6888-1/-3.

Typical colonies on BAIRD-PARKER agar are black or grey, shining and convex (1 mm to 1.5 mm in diameter after incubation for 24 h and 1.5-2.5 mm in diameter after incubation for 48 h) and are surrounded by a clear zone which may be partially opaque. After incubation for at least 24 h, an opalescent ring immediately in contact with the colonies may appear in this clear zone.

Atypical colonies on BAIRD-Parker agar have the same size as typical colonies and may present one of the following morphologies:

- shining black colonies with or without a narrow white edge; the clear zone is absent or barely visible and the opalescent ring is absent or hardly visible;
- grey colonies free of clear zone.

Atypical colonies are formed mainly by strains of coagulase-positive staphylococci contaminating, for example, dairy products, shrimps and giblets. They are less often formed by strains of coagulase-positive staphylococci contaminating other products.

Other colonies on BAIRD-PARKER agar are all the remaining colonies possibly present on the plates that do not show the typical or atypical appearance as described above, and are considered as the background flora.

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 to EN ISO 6888-1/-3, self-prepared plates can be stored prior to drying for up to 24 h at +1 C° to +5 °C in the dark and protected against evaporation for up to four weeks.

Quality Control

Function	Control strains	Incubation	Reference medium	Method of control	Expected results
Productivity	*Staphylococcus aureus* ATCC® 6538	22-26 h to 46-50 h at 36-38 °C	Tryptic Soy Agar (TSA)	Quantitative	Recovery ≥ 50 %, black or grey colonies with clear halo
	Staphylococcus aureus ATCC® 25923				
Selectivity	*Escherichia coli* ATCC® 8739	46-50 h at 36-38 °C	-	Qualitative	No growth
	Escherichia coli ATCC® 25922				

Function	Control strains	Incubation	Reference medium	Method of control	Expected results
Specificity	*Staphylococcus saprophyticus* ATCC® 15305	22-26 h to 46-50 h at 36-38 °C	-	Qualitative	No recovery limit, black or grey colonies without clear halo
	Staphylococcus epidermidis ATCC® 12228				
	Enterococcus hirae ATCC® 8043				
	Proteus mirabilis ATCC® 29906				No recovery limit, brown or black colonies without clear halo

Please refer to the actual batch related Certificate of Analysis.

The performance test is in accordance with the current version of EN ISO 11133.
A recovery rate of 50 % is equivalent to a productivity value of 0.5.

Literature

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

Baird-Parker, A.C. (1962): An improved diagnostic and selective medium for isolating coagulase positive staphylococci. J. Appl. Bact. **25**:12-19.

Baird-Parker, A.C. and Davenport, E. (1965): The effect of recovery medium on the isolation of *Staphylocoocus aureus* after heat treatment and after storage of frozen or dried cells. J. Appl. Bacteriol. **28**: 390-402.

FDA-BAM (2001): Chapter No. 12: *Staphylococcus aureus*. U.S. Food and Drug Administration - Bacteriological Analytical Manual.

ISO International Standardisation Organisation. Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and

other species) - Part 1: Technique using Baird-Parker agar medium + Amendment 1: Inclusion of precision data. EN ISO 6888-1:1999/Amd 1:2003.

ISO International Standardisation Organisation. Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) - Part 2: Technique using rabbit plasma fibrinogen agar medium - Amendment 1: Inclusion of precision data. EN ISO 6888-2:1999/Amd 1:2003.

ISO International Standardisation Organisation. Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) - Part 3: Detection and MPN technique for low numbers. EN ISO 6888-3:2003.

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

Smith, B.A. and Baird-Parker, A.C. (1964): The use of sulphamethazine for inhibiting *Proteus spp*. on Baird-Parker's isolation medium for *Staphyloccous aureus*. J. Appl. Bacteriol. **27**: 78-82.

Zangerl, P. (1999): Comparison of Baird-Parker agar and rabbit plasma fibrinogen medium for the enumeration of *Staphylococcus aureus* in raw milk and raw milk products. Arch. Lebensmittelhyg. **50**: 4-9.

Zangerl, P. and Becker, H. (2012): Culture media used in the detection and enumeration of coagulase-positive staphylocooci. In: Handbook of Culture Media for Food and Water Microbiology. (Corry, J.E.L., Curtis, G.D.W. and Baird, R.M. eds)., pp. 130 - 145. Royal Society of Chemistry, Cambridge, UK.

Ordering Information

Product	Cat. No.	Pack size	Other pack sizes available
GranuCult® BAIRD PARKER Agar (Base) acc. ISO 6888 and FDA-BAM	1.05406.0500	500 g	
Egg-Yolk Tellurite Emulsion Sterile, 20%, for microbiology	1.03785.0001	10 x 50 ml	
ReadyPlate™ Baird Parker ISO 6888	1.46137.0020	20 x 90 mm	100 x 90mm
ReadyPlate™ CT Baird Parker ISO 6888	1.46189.0020	20 x 55 mm	
GranuCult® GIOLITTI-CANTONI Broth (Base) acc. ISO 6888	1.10675.0500	500 g	
ReadyTube™ 1000 Giolitti Cantoni ISO 6888	1.46325.0006	6 x 1000ml	
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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