

Technical Data Sheet

GranuCult™

GIOLITTI-CANTONI Broth (Base)

acc. ISO 6888

Ordering number: 1.10675.0500

For the enumeration and detection of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) from food and animal feeding stuff as well as from environmental samples in the area of food production and food handling.

This culture medium complies with the specifications given by EN ISO 6888-3:2003 and APHA.

Mode of Action

The growth of staphylococci is promoted by pyruvate, glycine, Tween® 80 and by a high concentration of mannitol. This medium especially stimulates the growth of injured staphylococci and aid detection of the organism when present in small numbers only.

Gram-negative contaminants are inhibited by lithium chloride while Gram-positive contaminants are inhibited by potassium tellurite and glycine. Micrococci are suppressed to a certain degree because of anaerobiosis.

Growth of staphylococci may be recognized by a black coloration or black precipitate of the culture medium due to reduction of tellurite to metallic tellurium.

Typical Composition

Specified by EN ISO 6888-3 (single-strength)		GranuCult™ GIOLITTI-CANTONI broth acc. ISO 6888 (single-strength)	
Ezymatic digest of casein	10 g/l	Enzymatic digest of casein	10 g/l
Meat extract	5 g/l	Meat extract	5 g/l
Yeast extract	5 g/l	Yeast extract	5 g/l
Lithium chloride	5 g/l	Lithium chloride	5 g/l
Mannitol	20 g/l	D(-)Mannitol	20 g/l
Sodium chloride	5 g/l	Sodium chloride	5 g/l
Glycine	1.2 g/l	Glycine	1.2 g/l
Sodium pyruvate	3 g/l	Sodium pyruvate	3 g/l
Polyoxyethylene sorbitan monooleate (Tween® 80)	1 g/l	Tween® 80	1 g/l
Water	1000 ml/l	Water	n/a
pH at 25 °C	6.9 ± 0.2	pH at 25 °C	6.9 ± 0.2
Supplement acc. to EN ISO 6888-3:			
Potassium tellurite*	0.11 g/l	Potassium tellurite*	0.11 g/l

* According to EN ISO 6888-3, 0.1 ml of a filter-sterilized 1% aqueous solution of Potassium tellurite per 9 ml tube is added to the single strength broth.

Preparation

For the preparation of single strength broth, dissolve 55 g in 1 l of purified water. Distribute 9 ml portions into tubes. Autoclave 15 minutes at 121 °C. Cool to 44-47 °C and aseptically add to each tube 0.1 ml per tube of a filter-sterilized 1% aqueous solution of Potassium tellurite hydrate for microbiology (article number 1.05164.0100) immediately before use.

For the preparation of double strength broth, dissolve 110 g in 1 li of purified water. Distribute 10 ml portions into tubes. Autoclave 15 minutes at 121 °C. Cool to 44-47 °C and aseptically add to each tube 0.2 ml per tube of a filter-sterilized 1% aqueous solution of Potassium tellurite hydrate for microbiology (article number 1.05164.0100) immediately before use.

If the based medium is stored, heat the base medium shortly before use for 15 min at 100 °C to expel air. Cool to 44-47 °C and aseptically add the sterile potassium tellurite solution (see above).

The prepared broth is clear and yellowish-brown.

Experimental Procedure and Evaluation

Following the procedure for enumeration and detection by MPN given by EN ISO 6888-3, inoculate 9 ml of single-strength GIOLITTI-CANTONI broth with 1 g or 1 ml of the initial suspension or 10 ml of double-strength GIOLITTI-CANTONI broth with 10 ml or 10 g sample. For larger volumes of test portions, add the test portion of x g or x ml to 9x g or 9x ml of single-strength GIOLITTI-CANTONI broth, previously de-aerated and with potassium tellurite added, and have a minimum air volume in the flask or container.

Carefully pour a plug of agar or paraffin, cooled to between 44-47 °C onto the top of the medium and allow to solidify to form a seal. For the plug, Paraffin viscous (article number 1.07160.1000) or Agar-Agar (article number 1.01614.1000) can be used.

Incubate the inoculated and plugged tubes or flasks for 22-26 h at 36-38 °C. If blackening or black precipitate is detected, subculture as described below. If no blackening has developed, incubate for further 22-26 h and subculture as described below (whether or not blackening or a black precipitate has developed).

For subculturing, aseptically remove the plug of agar or paraffin by using a sterile spatula.

With a sterile loop, spread a loopful of each selected broth onto the surface of separate BAIRD-PARKER agar to obtain selected colonies.

For incubation, selection of the colonies and confirmation follow the procedure e.g. given by EN ISO 6888-3.

Instead of plugging the tubes with agar or paraffin, EN ISO 6888-3 gives also the possibility to incubate the tubes by using an anaerobic jar or an incubator under anaerobic conditions. Anaerobic conditions can be achieved by using Merck Anaerocult® A, Anaerocult® A mini, or Anaerocult® P in an anaerobic jar.

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.

Quality Control

GranuCult™ TSC agar (base) acc. ISO 7937 and ISO 14189 is tested with supplementation of Clostridium perfringens Supplement (article number 1.00888.0001).

Function	Control strains	Incubation	Method of control	Expected results
Productivity	<i>Staphylococcus aureus</i> ATCC® 25923 +	22-26 h to 46-50 h at 36-38 °C	Qualitative	>10 colonies on Granucult™ BAIRD-PARKER agar (base) acc. ISO 6888 and FDA-BAM with egg yolk tellurite emulsion, Black or grey colonies with clear halo
	<i>Escherichia coli</i> ATCC® 8739 <i>Staphylococcus aureus</i> ATCC® 6538 +			
Selectivity	<i>Escherichia coli</i> ATCC® 25922	46-50 h at 36-38 °C	Qualitative	Total inhibition on Tryptic Soy Agar (TSA)
	<i>Escherichia coli</i> ATCC® 8739 <i>Escherichia coli</i> ATCC® 25922			

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 70 % is equivalent to a productivity value of 0.7.

Literature

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

Giolitti, G. and Cantoni, C. (1966): A medium for the isolation of staphylococci from foodstuffs. J. Appl. Bacteriol. **29**: 395-398.

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.

Zangerl, P. and Becker, H. (2012): Culture media used in the detection and enumeration of coagulase-positive staphylococci. 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
GranuCult™ GIOLITTI-CANTONI Broth (Base) acc. ISO 6888	1.10675.0500	500 g
Potassium tellurite hydrate for microbiology	1.05164.0100	100 g
ReadyTube™ 1000 Giolitti Cantoni Broth acc. ISO 6888	1.46325.0006	with minimum order quantity
Paraffin viscous	1.07160.1000	1 l
Agar-agar, granulated, purified and free from inhibitors for microbiology	1.01614.1000	1 kg
GranuCult™ BAIRD-PARKER Agar (Base) acc. ISO 6888 and FDA-BAM	1.05406.0500	500 g
Anaerobic jar	1.16387.0001	1 ea
Anaeroclip®	1.14226.0001	1 x 25
Anaerocult® A	1.13829.0001	1 x 10
Anaerocult® A mini	1.01611.0001	1 x 25
Anaerocult® P	1.13807.0001	1 x 25
Anaerotest®	1.15112.0001	1 x 50
Plate basket	1.07040.0001	1 ea

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