



Giolitti-Cantoni Broth Base

M584

Intended Use:

Recommended for selective enrichment of *Staphylococcus aureus* from food.

Composition**

Ingredients	Gms / Litre
Tryptone	10.000
HM peptone B #	5.000
Yeast extract	5.000
Mannitol	20.000
Sodium chloride	5.000
Lithium chloride	5.000
Glycine	1.200
Sodium pyruvate	3.000
Final pH (at 25°C)	6.9±0.2

**Formula adjusted, standardized to suit performance parameters

Equivalent to Beef extract

Directions

Suspend 54.2 grams in 1000 ml purified/distilled water. Warm gently to dissolve the medium completely. Dispense 19 ml amounts in 20mm x 200mm test tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool rapidly to room temperature and aseptically add 0.3 ml of 3.5% Potassium Tellurite Solution (FD047) to each tube. Add 0.03 ml for testing meat and meat products. Mix well before use.

Principle And Interpretation

Giolitti-Cantoni Broth Base is a fluid medium employed for the recovery of low number of Staphylococci from foodstuffs as described by Giolitti and Cantoni (2). Giolitti- Cantoni Broth was also recommended by Mossel et.al. for detecting *Staphylococcus aureus* in dried milk, baby food and other food products (9). This medium was recommended as an enrichment medium by the International Dairy Federation (IDF) and APHA for detecting *S.aureus* in dried milk and other foods stating that the organism should be absent in 1 gram of sample (4,8). ISO committee has also recommended this medium for examination of meat and meat products (3).

Giolitti-Cantoni Broth Base contains tryptone, yeast extract and HM peptone B as sources of carbon, nitrogen, vitamins and minerals and B-complex vitamins. Mannitol and sodium pyruvate in the basal medium act as growth stimulants for *S. aureus*.

Lithium chloride inhibits gram-negative lactose fermenting bacilli. Potassium tellurite and glycine inhibit gram-positive bacilli (7). Addition of sterile paraffin wax to the inoculated medium inhibits Micrococci due to creation of anaerobic conditions. Potassium tellurite concentration must be reduced as per the weight of test sample (0.1 - 0.01 gram).

Type of specimen

Food samples

Specimen Collection and Handling

Inoculate 1 gram of sample or 1 ml of a suitable dilution of a sample into 19 ml of Giolitti-Cantoni Broth tubes in duplicate. Overlay the medium with 5 ml molten sterile paraffin wax and incubate at 37°C for 24-48 hours and examine daily. Blackening of the medium (usually at the bottom) within 48 hours indicates the presence of *S.aureus*. The blackened medium, when streaked on Baird Parker Agar (M043), shows black colonies surrounded by clear zones (1). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations

1. The medium should be inoculated as soon as it has been cooled after sterilization, otherwise absorbed oxygen should be expelled by placing the tubes in free-flowing steam for 15-20 minutes.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Light yellow to brownish yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Medium amber coloured, clear solution without any precipitate

Reaction

Reaction of 5.42% w/v aqueous solution at 25°C. pH : 6.9±0.2

pH

6.70-7.10

Cultural Response

Cultural characteristics observed with added 3.5% Potassium Tellurite Solution (FD047), after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Tellurite reduction
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 25923 (00034*)	50-100	good-luxuriant	positive, blackening at the bottom of the tubes or general blackening of the medium
<i>Escherichia coli</i> ATCC 25922 (00013*)	≥10 ⁴	inhibited	
<i>Micrococcus luteus</i> ATCC 10240	≥10 ⁴	inhibited	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 6538 (00032*)	50-100	good-luxuriant	positive, blackening at the bottom of the tubes or general blackening of the medium
<i>Bacillus cereus</i> ATCC 11778 (00001*)	≥10 ⁴	inhibited	
<i>Pseudomonas aeruginosa</i> ATCC 27853 (00025*)	≥10 ⁴	inhibited	
<i>Staphylococcus epidermidis</i> ATCC 12228 (00036*)	50-100	poor-fair	variable reaction

Key : * - Corresponding WDCM numbers

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (5,6).

Reference

1. De Waart J., Mossel D. A. A., Ten Broeke R. and Van de Moosdijk A., 1968, J. Appl. Bacteriol., 31:276.
2. Giolitti C. and Cantoni C., 1966, J. Appl. Bacteriol., 29: 395.
3. International Organization for Standardization (ISO), 1977, Draft ISO/DIS 5551, Part 2.
4. International Dairy Federation, 1978, IDF Standard 60A:1978, International Dairy Federation, Brussels, Belgium.

5. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
6. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock, D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
7. Lambin S. and German A., 1961, Precis De Microbiologie, pg. 63, Paris Masson.
8. Marshall, (Ed.), Standard Methods for the Microbiological Examination of Dairy Products, 1993, 16th Ed., American Public Health Association, Washington, D.C.
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