

Technical Information

Giolitti Cantoni Broth Base

Product Code: DM 1584

Application: - Giolitti Cantoni Broth Base is used for selective enrichment of *Staphylococcus aureus* from foods.

Composition**

| Ingredients | Gms / Litre |
|----------------------------|-------------|
| Casein enzymic hydrolysate | 10.000 |
| Beef extract | 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

Principle & Interpretation

Giolitti-Cantoni Broth Base is a fluid medium employed for the recovery of low number of Staphylococci from foodstuffs⁽⁶⁾. This media was recommended by Mossel et al for detecting Staphylococcus aureus in dried milk, baby food and other food products⁽¹⁾ and 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^(2, 3). Even ISO committee has also recommended this medium for examination of meat and meat products⁽⁴⁾.

Giolitti-Cantoni Broth Base contains casein enzymic hydrolysate, yeast extract and beef extract 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 growth of gram-negative lactose fermenting bacilli. Potassium tellurite and glycine inhibit growth of gram-positive bacilli⁽⁷⁾. Addition of sterile paraffin wax to the inoculated medium prevents Micrococci to grow due to creation of anaerobic conditions. Potassium tellurite concentration must be adjusted as per the weight of test sample (0.1 - 0.01 gram). 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.

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 (DM1043),

Methodology

Suspend 54.2 grams of powder media in 1000 ml 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 (MS2047) to each tube. Add 0.03 ml for testing meat and meat products. Mix well before use.

Caution: Lithium chloride is harmful. Avoid bodily contact and inhalation of vapours. On contact with skin, wash with plenty of water immediately @.

Quality Control

Physical 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 range 6.70-7.10

Cultural Response/ characteristics

DM 1584 Cultural characteristics observed with added 3.5% Potassium Tellurite Solution (MS2047), after an incubation at 35-37°C for 24-48 hours.

| Organism | Inoculum (CFU) | Growth | Tellurite reduction |
|--|----------------|----------------|---|
| <i>Staphylococcus aureus</i> ATCC 25923 | 50-100 | good-luxuriant | positive, blackening at the bottom of the tubes or general blackening of the medium |
| <i>Escherichia coli</i> ATCC 25922 | $\geq 10^3$ | inhibited | |
| <i>Micrococcus luteus</i> ATCC 10240 | $\geq 10^3$ | inhibited | |
| <i>Staphylococcus aureus</i> ATCC 6538 | $\geq 10^3$ | good-luxuriant | positive, blackening at the bottom of the tubes or general blackening of the medium |
| <i>Bacillus cereus</i> ATCC 11778 | $\geq 10^3$ | inhibited | |
| <i>Pseudomonas aeruginosa</i> ATCC 27853 | $\geq 10^3$ | inhibited | |
| <i>Staphylococcus epidermidis</i> ATCC 12228 | 50-100 | poor-fair | variable reaction |

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

Prepared Media: 2-8° in sealable plastic bags for 2-5 days.

Further Reading

1. Mossel D. A. A., Harrewijn G. A. and Elzebroek J. M., 1973, UNICEF.
2. International Dairy Federation, 1978, IDF Standard 60A: 1978, International Dairy Federation, Brussels, Belgium.
3. Marshall, (Ed.), Standard Methods for the Microbiological Examination of Dairy Products, 1993, 16th Ed., American Public Health Association, Washington, D.C.
4. International Organization for Standardization (ISO), 1977, Draft ISO/DIS 5551, Part 2.
5. De Waart J., Mossel D. A. A., Ten Broeke R. and Van de Moosdijk A., 1968, J. Appl. Bacteriol., 3 1:276.
6. Giolitti C. and Cantoni C., 1966, J. Appl. Bacteriol., 29: 395.
7. Lambin S. and German A., 1961, Precis De Microbiologie, pg. 63, Paris Masson.

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