Tryptone Glucose Extract Agar (Tryptone Glucose Yeast Extract Agar), Granulated®

GM014

Intended use

For enumeration of bacteria in water, air, milk and dairy products.

Composition**

Ingredients	g / L
Tryptone	5.000
Yeast extract	3.000
Dextrose (Glucose)	1.000
Agar	15.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 24.0 grams in 1000 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Mix well and pour into sterile Petri plates or dispense as desired.

Principle And Interpretation

Tryptone Glucose Yeast Extract Agar was originally developed by Bowers and Hucker (1) which they called as Tryptone Glucose Skim Milk Agar. Later on it was modified to the present composition for the cultivation and enumeration of bacteria in air, water (2), milk and dairy products (3). Various authors have studied different aspects of this medium like study of thermophilic bacteria in milk (4), influence of incubation temperature (5) etc. It is used as a standard medium for the bacteriological plate count of milk and dairy products (6).

Tryptone, yeast extract provide nitrogenous and carbonaceous compounds, long chain amino acids, vitamin B complex and other essential growth nutrients. Glucose is the energy source. For the enumeration purposes, pour plate method is suggested. Medium must be quickly poured into Petri dishes if milk sample is to be tested, because the milk may get flocculated if the medium remains hot for longer period of time.

Type of specimen

Dairy samples; Water samples

Specimen Collection and Handling:

For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards (2). For dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (3). 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. Individual organisms differ in their growth requirement and may show variable growth patterns on the medium.
2. Further biochemical identification is necessary for confirmation.
3. Each lot of the medium has been tested for the organisms specified on the COA. It is recommended to users to validate the medium for any specific microorganism other than mentioned in the COA based on the user's unique requirement.

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

Cream to yellow granular media.

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Light yellow coloured clear to slightly opalescent gel forms in Petri plates.

Reaction

Reaction of 2.4% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH

6.80-7.20

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18- 48 hours.

Organism	Inoculum (CFU)	Growth	Recovery
** *Bacillus spizizenii* ATCC 6633 (00003*)	50-100	good-luxuriant	>=70%
# *Klebsiella aerogenes* ATCC 13048 (00175*)	50-100	good-luxuriant	>=70%
Escherichia coli ATCC 25922 (00013*)	50-100	good-luxuriant	>=70%
Enterococcus faecalis ATCC 29212 (00087*)	50-100	good-luxuriant	>=70%
Lactobacillus casei ATCC 9595	50-100	good-luxuriant	>=70%
Pseudomonas aeruginosa ATCC 27853 (00025*)	50-100	good-luxuriant	>=70%
Staphylococcus aureus subsp.*aureus* ATCC 25923 (00034*)	50-100	good-luxuriant	>=70%

Key : (*) Corresponding WDCM numbers.

(#) Formerly known as *Enterobacter aerogenes* **Formerly known as *Bacillus subtilis* subsp. *spizizenii*

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 20-30°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 (7,8).

Reference

1.Bowers and Hucker, 1935, Tech. Bull., 228, N.Y.State Agr. Expt. Station.

2.Lipps WC, Braun-Howland EB, Baxter TE,eds. Standard methods for the Examination of Water and Wastewater, 24th ed. Washington DC:APHA Press; 2023.

3.Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.

4.Pickett, 1928, Tech. Bull. 147, N.Y. State Agr. Expt. Station.
5.Dennis and Weiser, 1937, J.Dairy Science, 20 : 445.
6.Abele C. A., Am. J. Pub. Health, 1939, 29: 821.
7.Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
8.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.

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