

Columbia Agar, Granulated

GMH144

Columbia Agar, granulated is used for detection of *Clostridium sporogenes* from pharmaceutical products in accordance with the microbial limit testing by harmonized methodology of USP/EP/BP/JP/IP.

Composition**

Ingredients	Gms / Litre
Pancreatic digest of casein	10.000
Meat peptic digest	5.000
Heart pancreatic digest	3.000
Yeast extract	5.000
Maize starch	1.000
Sodium chloride	5.000
Agar	15.000

If necessary adjust the pH so that after sterilization it is 7.3±0.2

* pH can also be measured after sterilization at 25°C

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 44 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 or as per validated cycle. Cool to 45-50°C. If required add the rehydrated contents of 1 vial of Gentamicin Selective Supplement (FD252). Mix well and pour into sterile Petri plates.

Principle And Interpretation

Columbia Blood Agar Base used as a general-purpose nutritious medium was devised by Ellner et al from Columbia University, which was further enriched by the addition of sheep blood (1). It can also be used for the isolation of organisms by addition of various supplements. Columbia Agar is prepared in accordance with the microbial limit testing harmonized methodology of USP/EP/BP/JP/IP (2,3,4,5,6). This medium is recommended to check the presence of *Clostridium* in non-sterile products like food, dietary, nutritional supplements related products. The genus *Clostridium* belongs to the family Clostridiaceae in the class Clostridia.

The product to be examined is initially enriched in Reinforced medium for clostridia . This medium contains 0.05% Agar and cysteine, which creates anaerobic conditions, thereby allowing anaerobic organisms to grow. The enriched sample is then subcultured on Columbia Agar. Columbia Agar is used as a base for media containing blood and for selective media formulations in which different combinations of antimicrobial agents are used as additives.

This medium is highly nutritious as it contains pancreatic digest of casein, meat peptic digest, heart pancreatic digest and yeast extract which supports rapid and luxuriant growth of fastidious as well as non-fastidious organisms. Sodium chloride maintains osmotic balance of medium. Maize starch acts as an energy source and also neutralizes toxic metabolites if produced. It is used in detection of Clostridia from pharmaceutical products. Gentamicin (FD252) inhibits a number of contaminating gram-negative organisms and Staphylococcus species.

Clostridia grows under anaerobic conditions as gram positive rods giving a catalase negative test. Further confirmation is carried out by identification tests.

Quality Control

Appearance

Cream to yellow coloured granular medium

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

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

Please refer disclaimer Overleaf.

pH

7.10-7.50

Growth Promotion Test

Growth Promotion was carried out in accordance with the harmonized method of USP/EP/BP/JP, and growth was observed under anaerobic conditions after an incubation at 30-35°C for 24-48 hours. Recovery rate is considered as 100% for bacteria growth on Casein Soybean Digest Agar (Soybean Casein Digest Agar).

Growth promoting properties

Growth of microorganism comparable to that previously obtained with previously tested and approved lot of medium occurs at the specified temperature for not more than the shortest period of time specified inoculating ≤ 100 cfu under anaerobic conditions (at 30-35°C for ≤ 48 hours).

Cultural Response

Organism	Inoculum (CFU)	Growth	Recovery	Incubation temperature	Incubation period
Growth Promoting					
<i>Clostridium sporogenes</i> ATCC 19404	50 -100	luxuriant	≥ 50 %	30 -35 °C	≤ 48 hrs
<i>Clostridium sporogenes</i> ATCC 11437	50 -100	luxuriant	≥ 50 %	30 -35 °C	≤ 48 hrs
<i>Bacteroides vulgatus</i> ATCC 8482	50 -100	luxuriant	≥ 50 %	30 -35 °C	≤ 48 hrs
Additional Microbiological testing					
<i>Clostridium perfringens</i> ATCC 13124	50 -100	luxuriant	≥ 50 %	30 -35 °C	≤ 48 hrs
<i>Bacteroides fragilis</i> ATCC 23745	50 -100	luxuriant	≥ 50 %	30 -35 °C	≤ 48 hrs

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

Reference

1. Ellner, Stoessel, Drakeford and Vasi, 1966, Am. J. Clin. Pathol., 45:502.
2. The United States Pharmacopoeia, 2014, The United States Pharmacopoeial Convention, Rockville, MD.
3. British Pharmacopoeia, 2014, The Stationery Office British Pharmacopoeia.
4. European Pharmacopoeia, 2014, European Department for the Quality of Medicines of Council of Europe.
5. Japanese Pharmacopoeia, 2008, Published by Society of Japanese Pharmacopoeia, Tokyo, Japan.
6. Indian Pharmacopoeia, 2014 Ministry of Health and Family Welfare, Govt. of India.

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