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Agar

Product No.: 101-9002-18-0

Specification

Physical State: Solid

Appearance: White to pale yellow or tan crystalline powder

Odor: Odorless

Molecular Formula: Mixture

Gel strength: 900g/cm²

Solubility: Insoluble in cold water but is slowly soluble in hot water to form a viscous solution. A 1% solution forms a stiff jelly on cooling. Insoluble in alcohol

Storage

Store at room temperature.

Description

Agar is a phycocolloid extracted from a group of red purple algae, usually *Gelidium* spp. Agar was first suggested for microbiological purposes in 1881 by Fannie Hesse. By the early 1900's, agar became the gelling agent of choice over gelatin because agar remains firm at growth temperatures for many pathogens and agar is generally resistant to a breakdown by bacterial enzymes. The use of agar in microbiological media significantly contributed to the advance of microbiology, paving the way to study pure cultures.

Agar, often referred to as agar-agar is used as a solid substrate for inclusion in culture media, gel preparation, and microbiological work. With the addition of nutritional or selection supplements, it is often used as a growth medium for bacteria and fungi. Agar is an excellent matrix for work with proteins and nucleic acids, being ideally suited for the separation of large molecules. Widely used for immunodiffusion and chromatography applications. Agar is a gel at room temperature, remaining firm at temperatures as high as 65°C. Agar melts at approximately 85 - 91°C, a different temperature from solidification at 34 - 36°C. This property is known as hysteresis. Agar is generally resistant to shear forces; however, different agar may have different gel strengths or degrees of stiffness.

Principles of the Procedure

Agar is typically used in a final concentration of 1 - 2% for solidifying culture media. Smaller quantities (0.05 - 0.5%) are used in media for motility studies (0.5% w/v), growth of anaerobes (0.1%), and microaerophiles.



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Application

Agar is a solidifying agent in preparing microbiological culture media. Agar is used in microbiology and bacteriology to make solid culture media for microorganisms.

Recommended Usage

1. LB Agar

LB Broth is used for the cultivation and maintenance of recombinant strains of Escherichia coli for genetic and molecular studies and may be used for routine cultivation of not particularly fastidious microorganisms. Agar is the solidifying agent.

Composition

Tryptone 10.0 g / L

Yeast extract 5.0 g / L

Sodium chloride 10.0 g / L

Agar 15.0 g / L

Preparation Instructions

1. For the preparation of 1 Liter liquid for LB agar plates weigh 10 g tryptone, 5 g yeast extract, 10 g NaCl and 15 g agar.
2. Add 1 mL 1 N NaOH to the dissolved powder.
3. The medium will be autoclaved for 25 minutes. At a temperature of ~50°C, it is still liquid and additives (e. g. antibiotics) can be added.
4. If 32 to 40 mL LB agar per plate are used, one liter will result in approx. 25 to 30 plates.
5. Freshly poured plates cool down with a slightly opened lid and turn them upside down when stored at +4°C.

2. Tryptone Bile Agar (TBA)

Used to detect and count E. coli using the membrane filtration method in water and the membrane-agar method in foodstuffs.

Composition

Tryptone 20 g / L

Bile salts 1.5 g / L

Agar 10 g / L

Final pH: 7.2 ± 0.2 at 25°C

3. Tryptone Bile X-Glucuronide (TBX) Medium

Tryptone Bile X-Glucuronide (TBX) Medium is used in the isolation and identification of E. coli in food. Tryptone Bile X-Glucuronide (TBX) Medium is a modification of Tryptone Bile Agar. Tryptone Bile Agar was developed to improve the detection of E. coli in foods. TBX Medium is enhanced by the addition of a chromogenic agent, X-glucuronide, detecting glucuronidase activity. The presence of the



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enzyme D-glucuronidase differentiates most *E. coli* spp. From other coliforms, and is the same enzyme used in the MUG reaction. X-glucuronide reacts slightly differently and when released into the medium is insoluble, accumulating within the cell.

Composition

Tryptone 20 g / L
Bile Salts 1.5 g / L
X-glucuronide 0.075 g / L
Agar 15 g / L (9 - 18 g / L according to gel strength)
Final pH: 7.2 ± 0.2 at 25°C

4. Buffered Charcoal Yeast Extract (BCYE) Agar

A basal medium used in the isolation of *Legionella* spp. from environmental and clinical specimens.

Composition

Activated charcoal 1.5 g / L
Yeast extract 10.0 g / L
ACES buffer 6.0 g / L
Ferric pyrophosphate 0.25 g / L
 α -ketoglutarate 1.0 g / L
Agar 12.0 g / L
pH approx. 6.9

5. Tryptone Glucose Yeast Extract Agar

Tryptone Glucose Yeast Extract Agar is recommended for enumeration of bacteria in water, air, milk and dairy products. It is used as a standard medium for the bacteriological plate count of milk and dairy products. Casein enzymic hydrolysate, yeast extract provide nitrogenous compounds, 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 time.

Composition

Casein enzymic hydrolysate 5.0 g / L
Yeast extract 3.0 g / L
Glucose 1.0 g / L
Agar 15.0 g / L
Final pH (at 25°C) 7.0±0.2

6. Plate Count Agar (PCA)

Medium for the aerobic plate count by surface inoculation method (Standard Plate Count Agar).

Composition

Peptone 11.80 g / L
Yeast Extract 9.00 g / L



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Mannitol 10.0 g / L
Sodium Chloride 55.0 g / L
Lithium Chloride 5.0 g / L
Aniline Blue 0.2 g / L
Bacteriological Agar 12.5 g / L
Final pH 7.2 ± 0.2 at 25°C

7. Triple Sugar Iron Agar (TSI Agar)

Triple Sugar Iron Agar (TSI) is a composite medium for the differentiation of the Enterobacteriaceae based on hydrogen sulfide production and fermentation of lactose, sucrose and dextrose.

Composition

Meat extract 4.0 g / L
Peptone mixture 18.0 g / L
Lactose 10.0 g / L
Dextrose 1.0 g / L
Sodium thiosulphate 0.3 g / L
Phenol red 0.025 g / L
Yeast extract 3.0 g / L
Sodium chloride 5.0 g / L
Sucrose 10.0 g / L
Ferric ammonium citrate 0.3 g / L
Agar 14.0 g / L
pH approx.7.4

8. Malt Extract Agar

Malt Extract Agar is a solid common purpose media used for the cultivation and maintenance of yeasts and molds. This media is recommended for the isolation and enumeration of fungi and yeasts from clinical specimens, foods, and cosmetics.

Composition

Maltose 12.75 g / L
Peptone 0.78 g / L
Dextrin 2.75 g / L
Glycerol 2.35 g / L
Agar 15.0 g / L
Final pH 4.6 ± 0.2 at 25°C

9. Corn Meal Agar

Corn Meal Agar is used for the cultivation of fungi and the demonstration of chlamydospore production.

Composition



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Corn Meal, Infusion from solids 50 g / L

Agar 15 g / L

Final pH: 6.0 ± 0.2 at 25°C

10. Xylose Lysine Desoxycholate Agar

XLD Agar is a moderately selective and differential medium for the isolation, cultivation and differentiation of gram-negative enteric pathogens microorganisms, especially *Shigella* species from both clinical and non-clinical specimens.

Composition

Xylose 3.5 g / L

Phenol Red 0.08 g / L

L-Lysine 5.0 g / L

Sodium Desoxycholate 2.5 g / L

Lactose 7.5 g / L

Sodium Thiosulfate 6.8 g / L

Saccharose 7.5 g / L

Ferric Ammonium Citrate 0.8 g / L

Sodium Chloride 5.0 g / L

Agar 13.5 g / L

Yeast Extract 3.0 g / L

11. Potato Dextrose Agar

Potato Dextrose agar is recommended for the isolation and enumeration of yeasts and molds from dairy and other food products. It is also used for stimulating sporulation, for maintaining stock cultures of certain dermatophytes and for differentiation of typical varieties of dermatophytes on the basis of pigment production.

Composition

Potatoes, infusion from 200.0 g / L

Dextrose 20.0 g / L

Agar 15.0 g / L

Final pH (at 25°C) 5.6±0.2

12. Lethen Agar

Remel Lethen Agar is a solid medium recommended for use in qualitative procedures for testing quaternary ammonium compounds for antimicrobial activity.

Composition

Casein enzymic hydrolysate 5.000 g / L

Beef extract 3.000 g / L

Dextrose 1.000 g / L

Polysorbate 80 7.000 g / L



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Lecithin 1.000 g / L

Agar 15.000 g / L

Final pH (at 25°C) 7.0±0.2

13.Letheen Agar, Modified

Letheen Agar, Modified, is used for the microbiological testing of cosmetics.

Composition

Letheen Agar 32.0 g / L

Tryptone 5.0 g / L

Proteose Peptone No. 3 10.0 g / L

Yeast Extract 2.0 g / L

Sodium Chloride 5.0 g / L

Sodium Bisulfite 0.1 g / L

Agar 5.0 g / L