AGAR, BACTERIOLOGICAL (7178)

Intended Use

Agar, Bacteriological is a solidifying agent for use in preparing microbiological culture media in a laboratory setting. Agar, Bacteriological is not intended for use in the diagnosis of disease or other conditions in humans. Agar, Bacteriological conforms with the testing specified in the USP/EP Pharmacopeia.[1,2]

Product Summary and Explanation

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.[3,4] By the early 1900's, agar became the gelling agent of choice over gelatin because agar remains firm at growth temperature 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 is a gel at room temperature, remaining firm at temperatures as high as 65°C.[5] 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.

Specifications for Agar, Bacteriological include good clarity, controlled gelation temperature, controlled melting temperature, good diffusion characteristics, absence of toxic bacterial inhibitors, and relative absence metabolically useful minerals and compounds. Agar, Bacteriological is recommended for clinical applications, auxotrophic studies, bacterial and yeast transformation studies, and bacterial molecular genetics applications.[6,7]

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.[5]

Precaution

1. For Laboratory Use Only.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free-flowing and creamy-white to beige.

Specification:

CAS #:	9002-18-0
Water Absorption	< 75 mL
Loss on Drying:	10% Maximum
Ash:	≤ 3.5%
Acid Insoluble Ashes:	< 0.5%
Gelatin	Passes test
Starch	Passes test
Foreign Organic Matter	< 1.0%
Foreign Inorganic Matter	< 1.0%

Prepared Appearance (1.5% wt/vol): Prepared medium is colorless to light yellow and slightly hazy to hazy.

pH:	6.0 – 7.5
Gel Point (1.5%)	34 - 36°C
Melting Point:	85 – 95°C
Gel Strength:	Record Value

Expected Culture Response: Cultural response in Peptone Agar after incubation at 35 ± 2°C and examined for growth after 18 – 24 hours incubation.

Microorganism	Approx. Inoculum (CFU)	Expected Growth
Escherichia coli ATCC® 25922	10 - 300	Good to excellent growth
Staphylococcus aureus ATCC® 25923	10 - 300	Fair to good growth
Streptococcus pyogenes ATCC® 19615	10 - 300	Poor to fair growth

Toxicity Test:
A test was performed on Tryptic Soy Agar using *Neisseia meninigitidis* as the indicator strain.

Specification	Expected Results
Toxicity Test	Non-Toxic

Test Procedure
Refer to appropriate references for specific procedures using Agar, Bacteriological.

Results
Refer to appropriate references for test results.

Storage
Store sealed medium containing Agar, Bacteriological at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

Expiration
Refer to expiration date stamped on container. Agar, Bacteriological should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to Agar, Bacteriological in its intact container when stored as directed.

Packaging

Agar, Bacteriological	**Code No.**	**7178A**	**500 g**
		7178B	**2 kg**
		7178C	**10 kg**

References

1. **United States Pharmacopeial Convention.** 2007. The United States pharmacopeia, 31st ed., Amended Chapters 61, 62, 111. The United States Pharmacopeial Convention, Rockville, MD.
2. **Directorate for the Quality of Medicines of the Council of Europe (EDQM).** 2007. The European Pharmacopoeia, Amended Chapters 2.6.12, 2.6.13, 5.1.4, Council of Europe, 67075 Strasbourg Cedex, France.

3. **Hesse, W.** 1894. Uber die quantitative Bestimmung der in der Luft enthaltenen Mikroorganismen. Mit. a.d. Kaiserl. Gesh. Berlin. 2: 182-207.

4. **Hitchens, A. P., and M. C. Leiking.** 1939. The introduction of agar-agar into bacteriology. J. Bacteriol. 37:485-493.
5. **Selby, H. H., and T. A. Selby.** 1959. Agar. *In* Whister (ed.). Industrial gums, Academic Press Inc., New York, N. Y.
6. **Sambrook, J., E. F. Fritsch, and T. Maniatis.** 1989. Molecular cloning, a laboratory manual, 2nd ed. Cold Spring Harbor Laboratory Press, New York, N. Y.
7. **Schiestl, R. H., and R. Daniel Geitz.** 1989. High efficiency transformation of intact yeast cells using single-stranded nucleic acids as a carrier. Current Genetics. 16:339-346.

Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.

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