

DNase Agar

Art. No. 01-346

Also known as

DNase Test Agar; Deoxyribonuclease Test Agar; Deoxyribonucleic Acid Agar; DNA Agar

Specification

Solid culture medium for the determination of the deoxyribonuclease activity of microorganisms, especially staphylococci and *Serratia* spp.

Formula* in g/L

Tryptose.....	20,00
DNA	2,00
Sodium chloride.....	5,00
Agar.....	15,00
Final pH 7,3 ± 0,2 at 25°C	

* Adjusted and /or supplemented as required to meet performance criteria

Directions

Suspend 42 g of powder in 1 L of distilled water and bring to the boil stirring constantly. Distribute into suitable containers and sterilize in the autoclave at 121°C for 15 minutes. Cool to 50°C and pour into the Petri dishes.

Description

Jeffries, Holtman and Guse (1957) incorporated DNA into a general medium with agar to study bacterial and fungal DNase production. Microorganisms that produce DNase cleave DNA, reducing it to nucleotide fragments. This reaction is observed by the appearance of a clear zone surrounding the growth, the rest of the plate remains turbid. Hydrochloric acid reacts with DNA producing a white precipitates that makes the medium turbid, and it does not react with nucleotide fragments (clear zones).

DiSalvo (1958) observed that there is a correlation between coagulase production and DNase activity, thus DNase Medium may be used as a laboratory test to diagnose pathogenic staphylococci.

Mannitol fermentation may be simultaneously determined if 10 g of mannitol and 0,025 g of phenol red are added to 1 L of DNase Agar, before sterilization. Positive results in both tests will determine with more certainty that the microorganism is a pathogenic *Staphylococcus aureus*. This medium is also useful to identify *Serratia marcescens* in clinical specimens, since it is a good DNase producer. Smith et al. (1969) modified the medium by adding toluidine blue and crystal violet, and stated that Gram negative DNase producing bacilli that grew on this medium may be described as *Serratia* species.

Technique

DNase Agar plates are inoculated with the microorganism to be studied by streaking a thick line of inoculum across the plate or by spotting onto the plate. Plates are incubated at 35-37°C for an 18-24 hour period.

To read, flood the plates with 1N hydrochloric acid and observe if there are any clear or transparent zones surrounding the streak. If the plate becomes totally turbid without any clear zone then the test is **negative**; however if any clear zones develop around the growth, the test is described as **positive**.

References

- DISALVO, J.W. (1958) Desoxyribonuclease and Coagulase Activity of Micrococci. Med. Tech. Bull. U.S. Armed Forces. Med. J. 9:191.
- JEFFRIES, C.D., D.F. HOLTMAN y D.G. GUSE (1957) Rapid Method for Determining the Activity of Microorganisms on NucleicAcids. J. Bacteriol. 73:590-591.
- SMITH, P.B., G.A. HANCOCK & D.L. RHODEN (1969) Improved medium for detecting deoxyribonucleaseproducing bacteria. Appl. Microbiol. 18:991-993.

Storage

For laboratory use only. Keep tightly closed, away from bright light, in a cool dry place (+4°C to 30°C and <60% RH).

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Quality control

Incubation temperature: 35°C ± 2,0

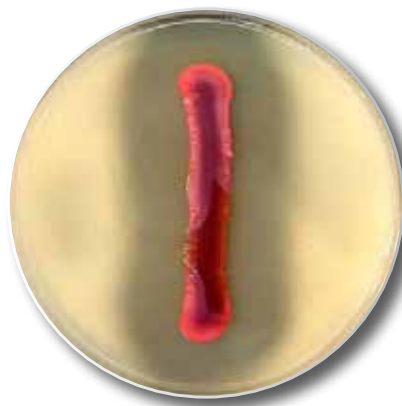
Incubation time: 24 h

Inoculum: Streak isolation

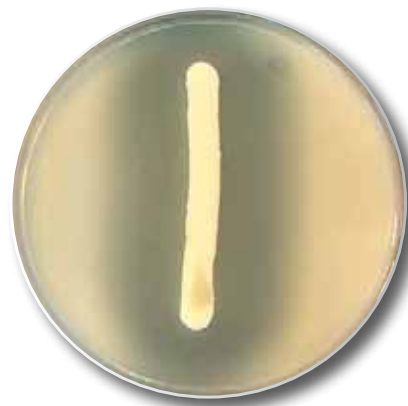
Microorganism	Growth	Remarks
<i>Pseudomonas aeruginosa</i> ATCC 27853	Good	DNase (-)
<i>Serratia marcescens</i> ATCC 274	Good (red colonies)	DNase (+)
<i>Serratia marcescens</i> ATCC 13880	Good	DNase (+)
<i>Staphylococcus aureus</i> ATCC 6538	Good	DNase (+)
<i>Staphylococcus aureus</i> ATCC 25923	Good	DNase (+)
<i>Escherichia coli</i> ATCC 25922	Good	DNase (-)



Pseudomonas aeruginosa ATCC 27853



27853 *Serratia marcescens* ATCC 274



Staphylococcus aureus ATCC 25923