# PRODUCT SPECIFICATION SHEET

## Lead Acetate Agar (DM520)

**Intended Use**
Lead Acetate Agar (DM520) is recommended for detection of hydrogen sulphide producing enteric bacteria.

**Product Summary and Explanation**
*Salmonella*, *Shigella*, *Yersinia* species and certain strains of *Escherichia coli* are responsible for severe gastroenteritis and life-threatening systemic illness in human.[1, 2] *Salmonella* is the primary cause of food-borne illness among enteric pathogens. Of these, *Salmonella typhi* can be differentiated due to their ability to form hydrogen sulphide.[3] Lead Acetate Agar was successfully used to study hydrogen sulphide production and is a modification of the original formulation of Spray.[4,5] Lead Acetate Agar can also be used to differentiate between *Salmonella Paratyphi A* and *Salmonella Paratyphi B.* (6) The latter produces hydrogen sulphide, observed as browning of the medium, within 18-24 hours, whereas the former fails to produces hydrogen sulphide.

**Principles of the Procedure**
Lead Acetate Agar contains peptic digest of animal tissue, proteose peptone and dextrose all of which provide essential nutrients required for the growth of bacteria. Sulphur from sodium thiosulphate is utilized by bacteria for their metabolic activities to produce hydrogen sulphide. Lead acetate acts as an indicator of hydrogen sulphide production observed as browning of the medium. Dextrose is the fermentable carbohydrate source. Gas production from dextrose is indicated by the presence of bubbles in the butt.

**Formula / Liter**

| Ingredients | Gms / Liter |
|---|---|
| Peptic digest of animal tissue | 15.00 |
| Proteose peptone | 5.00 |
| Dextrose | 1.00 |
| Lead acetate | 0.20 |
| Sodium thiosulphate | 0.08 |
| Agar | 15.00 |
| Final pH :6.6 ± 0.2 at 25°C | |
| Formula may be adjusted and/or supplemented as required to meet performance specifications | |

**Precautions**
1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

**Directions**
1. Suspend 36.28 grams of the medium in one liter of distilled water.
2. Heat to boiling, to dissolve the medium completely.
3. Dispense into test tubes and autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
4. Allow the tubes to cool in a slanted position to obtain slants with generous butts.
5. Inoculate pure culture by surface streaking the slant and stabbing the butt.

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**Quality Control Specifications**

| | |
|---|---|
| **Dehydrated Appearance** | Cream to yellow homogeneous free flowing powder |
| **Prepared Medium** | Medium amber coloured clear to slightly opalescent gel forms in tubes as slants |
| **Reaction of 3.63% Solution** | 6.6 ± 0.2 at 25°C |
| **Gel Strength** | Firm, comparable with 1.5% Agar gel |

**Expected Cultural Response :** Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

| Sr. No. | Organisms | Results to be achieved | | | |
|---|---|---|---|---|---|
| | | Inoculum (CFU) | Growth | Gas Production | $H_2S$ Production |
| 1. | *Escherichia coli ATCC 25922* | 50-100 | good-luxuriant | positive reaction | negative reaction |
| 2. | *Enterobacter aerogenes ATCC 13048* | 50-100 | good-luxuriant | positive reaction | negative reaction |
| 3. | *Salmonella Paratyphi A ATCC 9150* | 50-100 | good-luxuriant | negative reaction | negative reaction |
| 4. | *Salmonella Paratyphi B ATCC 8759* | 50-100 | good-luxuriant | negative reaction | positive reaction, browning of the medium |
| 5. | *Salmonella typhi ATCC 6539* | 50-100 | good-luxuriant | variable reaction | positive reaction, browning of the medium |
| 6. | *Salmonella typhimurium ATCC 14028* | 50-100 | good-luxuriant | negative reaction | positive reaction, browning of the medium |
| 7. | *Shigella dysenteriae ATCC 13313* | 50-100 | good-luxuriant | negative reaction | negative reaction |
| 8. | *Shigella flexneri ATCC 12022* | 50-100 | good-luxuriant | negative reaction | negative reaction |

The organisms listed are the minimum that should be used for quality control testing.

**Test Procedure**

Refer appropriate references for specific test procedures.

**Results**

Refer appropriate references and test procedures for interpretation of results.

**Storage**

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

**Expiration**

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

**Limitations of the Procedure**

1. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

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**Packaging**
**Product Name : Lead Acetate Agar**
**Product Code : DM520**
**Available Pack sizes : 500gm**

**References**


1. Balows A., Hausler W. J. Jr., Hermann K. L., Isenberg H. D., Shadomy H. J., (Eds.), Manual of Clinical Microbiology, 5th Ed., ASM, Washington, D.C.
2. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Yolken R. H., (Ed.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
3. Orlowski, 1897, Dissert, St. Petersburg.
4. Spray R. S., 1936, J. Bacteriol., 32:135.
5. Morrison L. E. and Tanner F. W., 1922, J. Bacteriol., 7:343.
6. Jordan E. O. and Victorson R., 1917, J. Infect. Dis., 21:554.


**Further Information**

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