

## Arginine Hydrochloride

### Intended Use

Arginine hydrochloride discs are used for Arginine hydrolysis test.

### Summary

Amino acid discs are used to differentiate the microorganisms on the basis of their ability to decarboxylate the amino acids. Arginine is a non-essential amino acid. Moeller introduced the Decarboxylase Broth for detecting the production of lysine and ornithine decarboxylase and arginine dihydrolase. Prior to Moeller's work, bacterial amino acid decarboxylases were studied by Gale, Gale and Epps.

### Principle

Decarboxylase Broth Base, Moeller contains dextrose which is the fermentable carbohydrate and pyridoxal is the co-factor for the decarboxylase/ dihydrolase enzyme. Bromo cresol purple and cresol red in the medium acts as pH indicators. When the medium is inoculated with the dextrose fermenting bacteria, the pH is lowered due to acid production, thus changing the colour of the indicator from purple to yellow. Acid produced stimulates dihydrolase enzyme. Hydrolysis of arginine yields putrescine. Formation of this amine increases the pH of the medium, changing the colour of the indicator from yellow to purple. If the organisms do not produce the appropriate enzyme, the medium remains acidic, yellow in colour.

### Directions

1. Arginine hydrochloride disc is added to the tubes containing Decarboxylase Broth Base, Moeller (Moeller Decarboxylase Broth Base) (201040020100 / 201040020500).
2. The test organism is inoculated into the broth containing the Arginine hydrochloride disc.
3. The inoculated tubes are overlaid with sterile mineral oil.
4. The tubes are incubated at 35°C-37°C for up to 4 days.

### Quality Control

**Appearance:** Black Filter paper discs of 10 mm diameter.

#### Organism (ATCC)

*Citrobacter freundii* (8090)  
*Klebsiella aerogenes* (13048)  
*Escherichia coli* (25922)  
*Klebsiella pneumoniae* subsp.  
*pneumoniae* (700603)  
*Proteus mirabilis* (25933)  
*Proteus hauseri* (13315)  
*Pseudomonas aeruginosa* (9027)  
*Shigella flexneri* serotype  
2b (12022)

#### Arginine decarboxylation

Variable reaction  
Negative reaction, yellow colour  
Variable reaction  
Negative reaction, yellow colour  
Negative reaction, yellow colour  
Negative reaction, yellow colour  
Positive reaction, purple colour  
Delayed positive reaction/ negative reaction, yellow colour

### Storage and Stability

Discs are stored at 10°C-30°C.

### Limitations

1. Decarboxylase tests can only be performed with microorganisms that can metabolize glucose to produce acid. An acidic environment is required for decarboxylase enzyme activity to occur.
2. After standing during incubation, a decarboxylase test may show a yellow layer and a purple layer. Shake the tube gently before interpreting the result.
3. Any trace of purple colour should be interpreted as a positive test. The test must be incubated for at least 24 hours to prevent a false negative result. Prolonged incubation from 6-10 days or longer may be required to demonstrate weak reactions due to an organism's poor decarboxylase activity.
4. To obtain the appropriate reactions, the inoculated tubes must be protected from air with a layer of sterile mineral oil. Exposure to air may cause alkalisation at the surface of the medium due to oxidation and deamination of peptones, causing a decarboxylase-negative organism to appear positive.

### Performance and Evaluation

Performance of the product is dependent on following parameters as per product label claim:

1. Directions
2. Storage
3. Expiry

### Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

### Reference

1. Moeller V., 1955, Acta Pathol. Microbiol. Scand. 36:158.
2. Gale and Epps, 1943, Nature, 152:327.
3. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

### Product Presentation:

Cat No.	Product Description	Pack Size
206010750050	Arginine Hydrochloride	Single Vial (1x 50 Disc)

### Disclaimer

Information provided is based on our inhouse technical data on file, it is recommended that user should validate at his end for suitable use of the product.

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