



## BAT Medium

M1561

### Alicyclobacillus Medium

BAT Medium is used for the isolation of *Alicyclobacillus* species from fruit juices.

### Composition\*\*

Ingredients	Gms / Litre
Yeast extract	2.000
Dextrose (Glucose)	5.000
Calcium chloride	0.25066
Magnesium sulphate	0.500
Ammonium sulphate	0.200
Potassium dihydrogen phosphate	3.000
Zinc sulphate	0.00018
Copper sulphate	0.00016
Manganese sulphate	0.00015
Cobalt chloride	0.00018
Boric acid	0.0001
Sodium molybdate	0.0003
Final pH ( at 25°C)	4.0±0.2

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

Suspend 10.95 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Dispense into tubes or flasks as desired. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Note: Adjust the pH of the medium to  $4.0 \pm 0.2$  (after sterilization) using 1N H<sub>2</sub>SO<sub>4</sub> or 1N NaOH .

### Principle And Interpretation

*Alicyclobacillus* species are gram positive, aerobic thermophilic, acidophilic bacteria. These spore-forming organisms are able to survive the relatively mild pasteurization temperatures used for fruit juices and drinks and some are able to grow out and cause spoilage of the beverage. Even very low numbers of *Alicyclobacillus* are able to cause spoilage and produce objectionable flavours and odours in the beverages, damaging the brand (1,2). These bacteria are able to grow at pH values as low as 2.5 and also at elevated temperatures as high as 60°C.

BAT (*Bacillus AcidoTerrestris*) medium has a pH of  $4.0 \pm 0.2$  which supports growth of *Alicyclobacillus* and inhibits most of the microbial flora (3). Rest of the microbial flora is inhibited at 60°C, which is the optimum growth temperature for *Alicyclobacillus* species.

### Quality Control

#### Appearance

Cream to yellow homogeneous free flowing powder

#### Colour and Clarity of prepared medium

Light amber coloured clear solution in tubes

#### Reaction

Reaction of 1.1% w/v aqueous solution at 25°C. pH :  $4.0 \pm 0.2$

#### pH

3.80-4.20

#### Cultural Response

M1561: Cultural characteristics observed after an incubation at 60°C for 48-72 hours.

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Organism	Growth
<i>Alicyclobacillus acidoterrestris</i> ATCC 49025	good-luxuriant
<i>Alicyclobacillus acidocaldarius</i> ATCC27009	good-luxuriant
<i>Escherichia coli</i> ATCC 25922	inhibited
<i>Staphylococcus aureus</i> ATCC 25923	inhibited
<i>Candida albicans</i> ATCC 10231	inhibited
<i>Saccharomyces cerevisiae</i> ATCC 9763	inhibited

### Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium between 2-8°C. Use before expiry date on the label.

### Reference

1. Ceny G., W. Hennlich and K. Rocallia-Furchtsaftwerb durch Bacillen. Isobioerung and Charakteriseeuing des Verdebserrgens-Z hebers Utres Forsch 179: 224-227, 1984
2. Baumgart and Merve S. The Impact of *Alicyclobacillus acidoterstris* on the quality of Juices and Soft Drinks Fruit processing 7 : 251-254 (2000)
3. BAUMGART, J. (2003) Media for detection and enumeration of *Alicyclobacillus acidoterrestris* and *Alicyclobacillus acidocaldarius* in foods. In handbook of culture Media for Food Microbiology, J.E.L. Corry et al,(Eds.) Elsevier Sci B.V. Amsterdam.

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