

Technical Information

Thermoacidurans Agar

Product Code: DM 1125

Application: Thermoacidurans Agar is recommended for isolation of *Bacillus thermoacidurans* from food products.

Composition**

Ingredients	Gms / Litre
Proteose peptone	5.000
Yeast extract	5.000
Dextrose	5.000
Dipotassium phosphate	4.000
Agar	20.000
Final pH (at 25°C)	5.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Bacillus coagulans is commonly found in soil and has been isolated from canned tomato products and dairy products. This organism is responsible for flat-sour spoilage of canned foods ⁽¹⁾. *B. coagulans* is also referred to as *B. thermoacidurans* ⁽²⁾. They play an important role in spoilage of low-acid foods packed in hermetically sealed containers ⁽²⁾. Spoilage due to bacterial growth is followed by a reduction in pH from 0.3 to 0.5 ⁽³⁾ and also the ends of the can remain flat. Thermoacidurans Agar, formulated by Stern et al ⁽³⁾ is also recommended by APHA ⁽¹⁾ for cultivation and isolation of *B. coagulans* from canned foods. *B. coagulans* is a facultative thermophile, that can grow at 20 to 55°C, and at pH levels between 5.0 to 7.0. *B. stercorophilus* can also grow at 55°C but it can not tolerate a pH value of 5.0 and therefore will fail to grow on Thermoacidurans Agar.

Proteose peptone and yeast extract provide nitrogenous compounds, vitamin B complex and other essential growth nutrients. Dipotassium phosphate buffers the medium. Dextrose acts as an energy source.

Extracted juice from the canned foods is subjected to heat shock. There after 1 ml of the heat shocked sample is transfer to 4 sterile Petri plates and to each of 2 plates, 10-20 ml Dextrose Tryptone Agar (DM1092) and to the other 2 plates, add 10-20 ml Thermoacidurans Agar. *B. coagulans* will form large, cream to white colonies after incubation.

Methodology

Suspend 39 grams of powder media in 1000 ml distilled water. Shake well & heat to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 50°C and pour into sterile Petri plates.

Quality Control

Physical Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 2.0% Agar gel.

Colour and Clarity of prepared medium

Yellow coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 3.9% w/v aqueous solution at 25°C. pH : 5.0±0.2

pH range 4.80-5.20



Dehydrated Culture Media
Bases / Media Supplements

Cultural Response/Characteristics

DM 1125: Cultural characteristics observed after an incubation at 55°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Sporulation
<i>Bacillus thermoacidurans</i> ATCC 8038	50-100	luxuriant	>=70 %	Positive

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

Prepared Media: 2-8° in sealable plastic bags for 2-5 days

Further Reading

1. Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.
2. Becker M. E., Pederson C. S., 1950, J. Bacteriol., 459:717
3. Stern R. N., Hegarty C. P. and Williams O. B., 1942, Food Research, 7:186.

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