Product :
YEAST STARCH GLUCOSE AGAR

Also known as
YSG AGAR

Specification
Solid medium for the detection and isolation of *Alicyclobacillus*, in fruit juices and other acidic food, according to IFU Standard Method No. 12.

Formula * in g/L
Yeast extract..... 2.0
Dextrose..... 1.0
Soluble starch..... 2.0
Agar.....20.0

Final pH 3,7 ±0,2 at 25 ºC
* Adjusted and /or supplemented as required to meet performance criteria

Directions
Suspend 25 g of the powder in 1 L of distilled water and bring to the boil to dissolve. Distribute it in suitable containers and sterilize in the autoclave at 121ºC for 15 minutes. Cool to 45-50ºC and adjust the pH to 3,7 ± 0,2 by adding 1N HCl. Mix well to homogenize and pour into sterile Petri dishes. Avoid heating or remelting the medium after the pH adjustment.

Description
Alicyclobacillus have emerged as food spoilage organisms of major significance to the fruit juice industry (Baumgart & Menje, 2000). Spoilage is generally manifested as the formation of off flavours and odours from compounds such as guaiacol and the halogenated phenols. The economic impact of such incidents can be very high, to date, no human risk are known to be associated with the consumption of juices and other food products containing *Alicyclobacillus* bacteria.
An acidified environment is required to grow alicyclobacilli and YSG media supports the growth of all currently known species of *Alicyclobacillus* (*A. acidocaldarius*, *A. acidoterrestris*, *A. cycloheptanicus* and *A. hesperidium*). The media complies the Standard IFU Method for the detection of taint producing organisms in fruit juices.
The low pH-value of the media, in combination with the high incubation temperature inhibits the contaminating microbiota. K Agar (Art. No. 01-674) when incubated at 45ºC supports the growth of predominantly *A. acidoterrestris* and limited growth of other species of the genus. Therefore, K Agar (Art. No. 01-674) is used to detect predominantly *A. acidoterrestris* strains.

Technique
The IFU Standard provides three methods of detection depending on the sample composition and the time since processing:

1. Raw materials (including process water): A heat shock treatment is prescribed followed by direct plating (optional), filtration or enrichment in liquid medium.
2. Final products sampled directly after (heat) processing where an additional heat shock is unnecessary: Pre-incubation of the sample in liquid medium is prescribed.
3. Final products taken from the market: Pre-incubation of the sample, as per the heat shock treatment. If spoilage is suspected and no alicyclobacilli detected after direct plating, a heath shock and enrichment is recommended.

In all methodology incubation for 3-5 days at 45 ± 1ºC is prescribed. Count all colonies growing on the YSG Agar as presumptive alicyclobacilli. Confirm the suspicious colonies by further testing.

Quality control
Incubation temperature: 45°C ±2,0 **Incubation time:** 72 h-5 days
Inoculum: 10-100 CFU. Spiral Plate Method (according to ISO 11133:2014/Amd 1:2018)

Microorganism	Growth	Remarks
Alicyclobacillus acidoterrestris ATCC® 49025	Productivity > 0.70	-
Alicyclobacillus acidocaldarius ATCC® 27009	Productivity > 0.70	50-55 ºC
Escherichia coli ATCC® 25922	Inhibited	-

References

· 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.

· BAUMGART, J. & S. MENJE (2000) The impact of Alicyclobacillus acidoterrestris on the quality of juices and soft drinks. Fruit Processing 7:251-254.

· CERNY, G., W. HENNLICH & K. PORALLA (1984) Fruchsaftverdeb durch Bazillen: Isolierung und Charakterisierung des Verdebserregers. Z. Lebens. Unter Forsch. 179:224-227.

. ISO 11133:2014/ Adm 1:2018. Microbiology of food, animal feed and water. Preparation, production, storage and performance testing of culture media.

· IFU STANDARDS (2004) Method No. 12 on the detection of taint producing Alicyclobacillus in fruit juices. Revision march 2007.

· WITTHUHN, R.C., W. DUVENAGE & P.A. GOUWS (2007) Evaluation of different growth media for the recovery of the species of Alicyclobacillus. Letters Appl. Microbiol. 45:224-229

Storage

For laboratory use only. Keep tightly closed, away from bright light, in a cool dry place (+4 ºC to 30 ºC).