PALL Food and Beverage

GeneDisc® Technologies

For the Rapid Detection and Identification of TAB Spoilage

Alicyclobacillus spp., also known as Thermophilic Acidophilic Bacteria (TAB), are spoilage organisms in the fruit juice industry. They can generate strong off flavors and odors due to guaiacol or bromophenols production.

Their ability to grow in acidic conditions and their resistance to normal thermal processing (such as pasteurization and hot fill) have made these bacteria a major quality issue for ingredient, juice and concentrate processors.

Contamination with these non-pathogenic bacteria can occur at various stages of processing. Rapid detection and identification of TAB spoilage is an informative solution which can increase quality monitoring at critical points of the process to facilitate high quality product release.

GeneDisc System Benefits

Rapid — While culture methods require up to 10 days to results, Pall's GeneDisc method allows simultaneous presence/absence detection and identification of *Alicyclobacillus* spp. in as fast as 2 days. For early and rapid assessment of contamination level, relative quantification can be obtained in 2 to 3 hours.

Easy to use — GeneDisc method is designed for routine use and validated from sample to result. Implementing PCR (Polymerase Chain Reaction) has never been this easy.

Modular — System modularity fits your throughput needs: up to 48 samples can be analyzed in a one hour PCR run.

A Solution Designed for Beverage Industries

Save money – Shorter time to results reduces your storage cost by accelerating the release of your raw materials and/or final products. Combined with its ease of use, the GeneDisc system will reduce your overall testing cost.

Get informative results – GeneDisc method allows the simultaneous detection of *Alicyclobacillus* spp. and identification of the 4 strains known to be main potential spoilers (*A. acidoterrestris, A. acidophilus, A. cycloheptanicus, A. herbarius*).

Get accurate results – Unique highly specific and sensitive tests enable a wide coverage of *Alicyclobacillus* species.

Alicyclobacillus spp. Identification

Bacteria	Gram +, rod shaped, sporeforming bacillus
Distinctive features	Thermophilic (20 – 70 °C) Acidophilic (pH 2.0 – 6.0)
Identified in	Fruit juices and concentrates, ingredients such as sugar syrups and sugar powders, condensate water
Main spoilage associated strains	*A. acidoterrestris* *A. acidophilus* *A. cycloheptanicus* *A. herbarius*

How the System Works

Technical Information

Enrichment Time (for Detection Protocol Only)	Filterable samples Unfilterable samples	48 hours 72 hours
Sample Preparation Time	Filterable samples Unfilterable samples	1 hour for 24 samples 1 hour for 24 samples
PCR Cycle Time		< 1 hour
Total Turnaround Time	Filterable samples Unfilterable samples Filterable samples	50 hours (for detection protocol) 74 hours (for detection protocol) 2-3 hours (for relative quantification protocol)
Hands On Time	Filterable samples Unfilterable samples	35 minutes for 24 samples 25 minutes for 24 samples
Limit Of Detection	Absence in 10 mL or 10 g of sample (for detection protocol) Down to 20 targeted bacteria/sample (for relative quantification protocol)	
Relative Quantification (for Dedicated Protocol)	Down to 100 targeted bacteria/sample	
Specificity	• Wide range of strains tested for inclusivity and exclusivity • *Alicyclobacillus* spp. assay covers over 200 strains	
Validated Matrices	• Fruit concentrate and fruit juice (including apple, orange, grapefruit, white and red grape, blueberry, mango) • Sugar powder and sugar syrup • Condensate water	
Internal Positive Control	Detects presence of inhibitors in each sample DNA extract	

Further Readings

- Poster: Zoder P. *et al.* Novel Molecular Assay and Sample Preparation Method for the Detection of *Alicyclobacillus* in Fruit Juice Concentrates and Bottling Process Materials, Spoilers 2013.
- Poster: McNamara C.J. *et al.* Reduced Time to Detection of *Alicyclobacillus acidoterrestris* in Fruit Juice Concentrates Using the Pall GeneDisc System, Ocean Spray Cranberries, Inc. and Pall Corporation, IAFP 2014

Ordering Information

Part Number	Description	Samples/pack
	Equipment	
EGDCV3A	GeneDisc Cycler Base Unit	-
EGDSV3A	GeneDisc Cycler Sub Unit	-
EGDUL1A230 (EU) EGDUL1A120 (US)	GeneDisc Ultra-Lyser	-
	Consumables	
PFOOD1100	Extraction Pack Food 1	100
GTABSPO106006	GeneDisc Plate for TAB Spoilage	36

We also offer a full product range for pathogen detection in food and water and for spoilage organisms in beverage.

Quantitative tests for pathogens in water (*Legionella, E. coli, Enterococcus…*) are also available.

For more information including part numbers please contact us.

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