



An outbreak of ShigaToxic *Escherichia coli* (STEC) reported in Germany spread across Europe and some travel associated cases were detected. Media reports indicate that this outbreak effected more than 3950 people and that 55 people died.

It was later discovered that the *E. coli* strain associated to this outbreak was an atypical Enterotoxigenic *E. coli* (EAggEC), showing an unusual combination of virulence factors.

Epidemiological investigations concluded that the most likely carrier food was sprouts.

This event led European Commission to implement a regulation for the control for STEC including O104:H4 in sprouts. The reference method used for this regulation is ISO/TS 13136.

GeneDisc System Benefits

Rapid — Accelerate the batch release of your short shelf life products and raw materials. While other methods such as immunoassays or culture methods require up to 3 days to results, the Pall GeneDisc method allows a detection of pathogenic STEC in as fast as 10 hours.

Easy to use — GeneDisc solutions are designed for routine use. Implementing PCR (Polymerase Chain Reaction) has never been this easy.

High throughput capability — Process up to 96 samples DNA extractions simultaneously in less than one hour.

Modular — System modularity fits your throughput needs: up to 96 samples can be analyzed in a one hour PCR run.

A Solution Designed For Food Industries

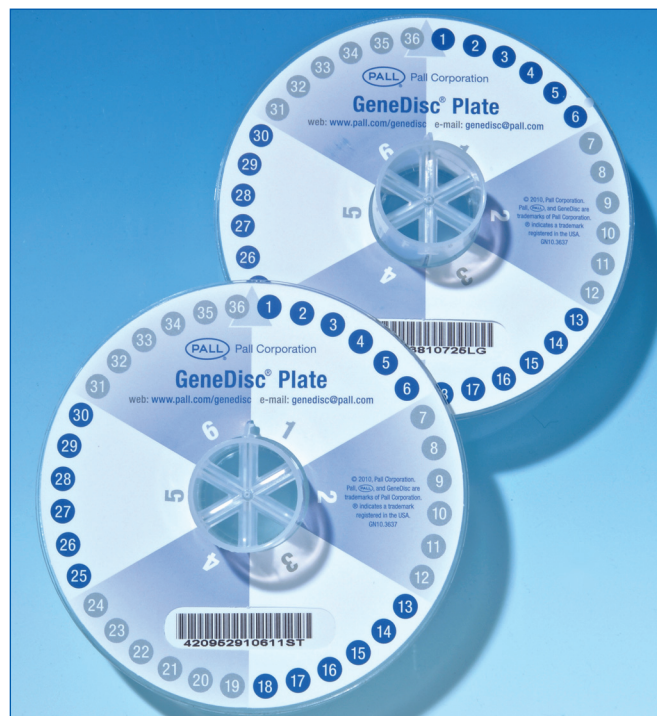
Pall GeneDisc Technologies provides an ideal solution for food companies in need of a reliable control of *E. coli* O104 risk.

In line with ISO/TS 13136 — With this method, a systematic screening based on virulence factors allows to discriminate pathogenic strains from non pathogenic ones. If result is positive, an identification of the serogroup (*E. coli* O104 or other STEC Top 5) is performed.

Perform all EU regulation testings for sprouts at once — Simultaneous analysis for STEC and *Salmonella* spp. is available and does not require any additional hands-on time nor enrichment.

GeneDisc® Technologies

For an easy, rapid and specific detection of pathogenic *E. coli* O104:H4 in food



E. coli O104:H4 2011 Outbreak Strain ID

Bacteria	Gram —, motile enterobacteria
Genetic markers of 2011 crisis strain	<ul style="list-style-type: none"> • Shigatoxin <i>stx2</i> • <i>terE</i> (tellurite resistance gene cluster) • <i>aggR</i> (master regulator of virulence genes) • Multi-resistance pattern to antimicrobials
Disease	Gastro-enteritis, Hemorrhagic diarrhea, Hemolytic-uremic syndrome (HUS)
Source of contamination	Fenugreek seeds
Most likely food vehicle	Sprouted seeds
Number of HUS STEC cases (deaths)	909 (37) — RKI, ECDC & WHO (as of August 16th, 2011)
Number of non-HUS STEC cases (deaths)	3,070 (18) — RKI, ECDC & WHO (as of August 16th, 2011)



How the System Works



Technical Information

Enrichment Time	Down to 8 hours
Sample Preparation Time	< 1 hour for 96 samples
PCR Cycle Time	< 1 hour
Total Turnaround Time	Down to 10 hours
Hands On Time	About 30 minutes for 96 samples (<30 s/sample)
Limit Of Detection	1 bacteria in 25 g of food sample
Specificity	Wide range of strains tested for inclusivity and exclusivity
Internal Positive Control Per Sample Analysis	Detects presence of inhibitors in each sample DNA extract

Ordering Information

Part Number	Description	Samples/pack
Equipment		
EGDCV3A	GeneDisc Cyclor Base Unit	-
EGDSV3A	GeneDisc Cyclor Sub Unit	-
EGDUL1A230 (EU) EGDUL1A120 (US)	GeneDisc Ultra-Lyser	-
EGDBH96230 (EU) EGDBH96120 (US)	GeneDisc DryBlock Heater 96	-
SPSKIT96	Extraction Pack Food 2 Starter Kit	-
Consumables		
PFOOD1100	Extraction Pack Food 1	100
PFOOD2096	Extraction Pack Food 2 (High throughput)	96
GSTEHEC106006 GSTEHEC112006	GeneDisc ShigaToxic <i>E. coli</i> *	36 72
GSTECSL206006 GSTECSL212006	GeneDisc ShigaToxic <i>E. coli</i> * & <i>Salmonella</i> spp.	36 72
GEHECID106006	GeneDisc EHEC 5 ID (H7, O26, O103, O111, O145)	36
GECO104106006	GeneDisc <i>E. coli</i> O104	18

*Includes identification of pathogenic *E. coli* O157

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.

Further Readings

- Poster: Fach, P. *et al.* *E.coli* O104:H4 Virulence Factors and Detection methods. IAFP, Milwaukee, 2011.
- Bugarel M. *et al.* Micro-array for the identification of Shiga toxin-producing *Escherichia coli* (STEC) seropathotypes associated with Hemorrhagic Colitis and Hemolytic Uremic Syndrome in humans, International Journal of Food Microbiology, Volume 142, Issue 3, 1 September 2010, Pages 318-329, ISSN 0168-1605, 10.1016/j.ijfoodmicro.2010.07.010.



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