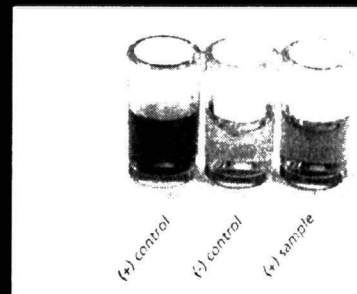




NA-270



# Test Kits for Food Processing Industry



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NA 270

## Natural Toxins Test Kits

### Test Kits

Owing to several reasons, there is a growing demand for test kits in the global food industry.

Microbiological contamination is a serious problem facing the food industry today. These foods are often contaminated with *Salmonella*, *Salmonella enteritidis*, and *Listeria monocytogenes*. One of the biggest problems the food industry faces is the long waiting period for test results for these forms of bacteria.

Another problem is the presence of natural toxins in the food products. Since these toxins are harmful, people are more conscious today about the quality of the food products available in the market. In this regard, food processors and exporters face a major problem in maintaining the required quality standards. Most conventional methods available for testing these quality parameters are time consuming methods which necessitate a waiting time for obtaining test results. Industrialists are moving toward test kits due to various reasons such as speedy results, the fact that they are easy to use, require minimum training and are cost effective.

Even though there are a lot of test kits available in the food processing industry in the global market, Sri Lankan food processors are comparatively unaware of these test kits. This booklet aims at providing some information for food processors in Sri Lanka to minimize the knowledge gap.

If Sri Lankan food processors concern themselves more with quality parameters, the industry could look forward to a bright future.

### For Aflatoxin

#### Agri-Screen

Agri-Screen for aflatoxin is used for the screening analysis of aflatoxin in such commodities as corn, commmeal, corn gluten meal, corn/soy blend, wheat, rice milo, soy, whole cottonseed, cottonseed meal, raw peanuts, peanut butter and mixed feeds.

#### The Test

The test is a competitive direct ELISA that provides a visible screening result against a known control toxin concentration. Free toxin in the sample and control competes with enzyme-labeled toxin(conjugate) for the antibody binding sites. after a wash step, substrate reacts with the bound enzyme conjugate to produce blue color. If the sample has less blue color than the control, it contains more toxin than the control.

*Neogens Test Kits*  
[www.noegen.com](http://www.noegen.com)

### MYCOMONITOR™

The MYCOMONITOR™ Total Aflatoxin Assay is a competitive enzyme-linked immunoassay intended for the quantitative detection of aflatoxin B<sub>1</sub>, B<sub>2</sub>, G<sub>1</sub> and G<sub>2</sub> in grains, nuts, cottonseeds, cereals and other commodities including animal feeds.

#### ASSAY PRINCIPLE

The MYCOMONITOR™ Total Aflatoxin Assay is a solid phase direct competitive enzyme immunoassay. An aflatoxin specific antibody optimized to cross react with all four subtypes of aflatoxin is coated to a polystyrene microwell. intensity of the color is directly proportional to the amount of bound conjugate and inversely proportional to the concentration of aflatoxin in the sample or standard. Therefore, as the concentration of aflatoxin in the sample or standard increases, the intensity of the blue color will decrease. An acidic stop solution is added which changes the chromagen color from blue to yellow. The microwells are measured optically by a microplate reader with an absorbance filter of 450nm (OD<sub>450</sub>). The optical densities of the samples are compared to the ODs of the kit standards and an interpretative result is determined.

## Natural Toxins Test Kits

### FOR AFLATOXIN

COMPANY	KIT NAME	PRIMARY MATRICES	CONTACT INFORMATION
Editek / Diagnostix	Single Step Cup	pure culture	EDITEK Inc 1238 Anthony Road Burlington NC 27215 USA  <a href="mailto:mitch.owens@internetmci.com">mitch.owens@internetmci.com</a>
Editek / Diagnostix	EZ Screen	corn, peanuts	-Do-
Editek / Diagnostix	EZ-QUANT	corn, peanuts	-Do-
International Diagnostics Systems Corp.	Afla-Cup Aflatoxin Screening	corn, peanuts	481 North Frederick Avenue Suite 500 Gaithersburg, Maryland 20877-2417 USA +1-301-924-7077 (worldwide)
r-Biopharm GmbH	RIDASCREEN Aflatoxin Total	cereals, feed	R-Biopharm AG Dolivostrasse 10 Darmstadt D-64293 Germany Tel: +[49] 6151 8102 0 Fax: +[49] 6151 8102 20
r-Biopharm GmbH	RIDASCREEN Aflatoxin Column	cereals, feed	-do-
Vicam LP	Aflatest	grain and corn, cottonseed	VICAM, L.P. 313 Pleasant Street Watertown, MA 02172
Neogen	Veratox AST	grain, corn, cottonseed	Neogen Corporation Corporate Headquarters Food Safety Division 620 Leshar Place Lansing MI 48912 USA Telephone: 517/372-9200 Facsimile: 517/372-0108 e-mail: <a href="mailto:neogen-info@neogen.com">neogen-info@neogen.com</a>
Charm Sciences, Inc.	Charm II Aflatoxin Assay	milk, feed	659, Andover St. Lawrence, M.A. 01843 Fax-978-687-9216 <a href="mailto:info@charm.com">info@charm.com</a>
Charm Sciences, Inc.	Charm ROSA Aflatoxin M1 Test	bovine milk	-do-
Editek / Diagnostix	Single Step Cup	milk	EDITEK Inc 1238 Anthony Road Burlington NC 27215 USA
Reidel-de Haen AG	ELIZA System for Aflatoxin M1	milk, dairy	481 North Frederick Avenue Suite 500, Gaithersburg, Maryland 20877

## Food Borne Bacteria Test Kits

### ELISA Systems Salmonella Assay

The **ELISA SYSTEMS Salmonella** assay is an enzyme-linked immunosorbent assay (ELISA) that may be used to screen enrichment cultures of food, food products, animal feeds, environmental samples and animal and bird faeces for the presence of *Salmonella*.

Although many methods exist for detecting *Salmonella* in foods, most are cumbersome, time consuming and not applicable to some production situations. Screening by the **ELISA SYSTEMS Salmonella** assay rapidly distinguishes samples that are free of *Salmonella* from those that are presumptively positive and require confirmatory testing.

### *E. coli* Verotoxin

The **ELISA SYSTEMS E. coli** Verotoxin assay is an enzyme-linked immunosorbent assay (ELISA) that may be used to screen meat products for the presence of verotoxin.

The verotoxin (VT), or shiga-like toxin family is a group of closely related toxins produced by certain strains of *Escherichia coli*. These strains are a significant cause of human haemorrhagic colitis (HC) and haemolytic uremic syndrome (HUS). In addition, they are both water borne and food borne and may also be transmitted from person-to-person by the oral-faecal route. In adults, illness caused by verotoxin may last several days, while in children and the elderly, the illness can be fatal.

In the past, lengthy and cumbersome diagnostic procedures have been utilized for the detection of verotoxin. Currently, simple to perform enzyme-linked immunosorbent assays (ELISA) are being used as an alternative to these longer tedious methods. These antigen-detection assays provide a cost effective tool for the management of diarrhoeal disease with an accurate and rapid test.

### Micro chip detects pathogens in meat products

Xenogix, Denmark, has developed a micro chip capable of detecting harmful bacteria in meat products. The new method facilitates precise detection of multiple pathogens within minutes. This is feasible as the chip contains the genetic code of the bacteria to be detected.

Source: [www.xenogix.com](http://www.xenogix.com)

### New Rapid detection System for Salmonella in Food-Gene Trak System

A leading manufacturer of food diagnostics, introduces a new rapid system for detecting *Salmonella* spp. in food. GENE-TAK System's Sequepoint *Salmonella* utilizes DNA hybridization technology in a microtiter format that can be used manually or with an automated processor for high throughput of microbiological analysis of food samples.

Sequepoint *Salmonella* is a DNA probe assay specifically designed for the rapid detection of *salmonella* spp. in food. Utilization of directly labeled probes provides sensitivity and specificity equivalent to the GENE-TRAK *Salmonella* DLP Assay and traditional culture methods. The assay is capable of detecting as few as 1 *Salmonella* cell in 25 grams of food sample. The combination of DNA hybridization technology in a 96 well microtiter format offers flexibility, convenience and reliable results.

[www.meat & poultry Online](http://www.meat&poultry.com)

### Salmonella Immunoassay Kit 960-well

It is anticipated that limiting the contamination of food products, animal feeds and animal environments with *Salmonella* will reduce the economic and health impacts of food-borne infections in people. Although many methods exist for detecting *Salmonella* in foods, most are cumbersome, time consuming and not applicable to some production situations. Screening by the SafePath *Salmonella* assay rapidly distinguishes samples that are free of *Salmonella* from those that are presumptively positive and require confirmatory testing. Principle of Procedure: Test samples are cultured as recommended and a portion of the broth culture is heated briefly to release the *Salmonella* antigen and to inactivate the bacteria before being added to the microwells. During the first incubation, *Salmonella* LPS antigen in the sample is captured by antibodies attached to the wells. In the second incubation, a peroxidase conjugated anti-*Salmonella* monoclonal antibody binds to the captured *Salmonella* antigen. After washings to remove unbound enzyme conjugate, a chromogen is added which develops a blue color in the presence of the enzyme complex and peroxide. The stop solution ends the reaction and turns the blue color to yellow.

<http://www.safepath.com/>

## Food Borne Bacteria Test Kits

### Rapid detection of Salmonella using an interferometric waveguide biosensor

An optical interferometric biosensor, based on a planar optical waveguide, has been used for direct detection of *Salmonella typhimurium*. The waveguide has an evanescent field that is sensitive to index of refraction changes in a thin layer above the sensor surface. The binding of antigen to antibody immobilized using a thiol-terminal silane derivatized sensor surface is measured by combining a sensing beam with a reference beam in a Mach-Zender interferometer configuration. Phase changes are quantified using fast Fourier transform signal processing.

Intact *Salmonella* bacteria ( $10^3$ – $10^7$  cells/ml) were detected within 30 minutes. No antibody labeling or extended incubation steps are required. Both live and heat-killed cells were examined and detected with equal sensitivity. Quantitative reproducibility of the assay was measured using independently prepared sensor chips and found to be within 10% over several orders of magnitude in concentration. Samples of poultry chiller water from a processing plant were spiked with *Salmonella* for detection within a more realistic matrix.

This technology promises detection sensitivity greater than that of current genetic or immunoassay techniques and a rugged design to allow its use in online process control. Further testing and refinement of the biosensor will allow the addition of other pathogen species in either a single or multi-assay format and the creation of a stand-alone, field-use package.

2002 Annual Meeting and Food Expo - Anaheim, California

### Rapid Detection of E. coli 0157 and 0157:H7

Consumption of food contaminated with pathogenic enteric bacteria and viruses is the major source of food borne infections. Several strains of enterohemorrhagic E. coli (EHEC) serotype have been implicated in severe bloody diarrhea (hemorrhagic colitis) and hemorrhagic uremic syndrome which may lead to kidney failure. Ingestion of as few as 10 - 100 bacteria of E. coli 0157 or E. coli 0157:H7 is sufficient to cause the disease.

SAS™ E. coli Test is designed to detect E. coli 0157:H7 and 0157 antigens in food samples. SAS™ E. coli Test is a

rapid qualitative test that is based on the use of E. coli 0157:H7-specific antibodies. Used in either a dipstick or card format, the reaction between the enriched positive sample and the colored particle-conjugated antibody will form a complex that migrates along the membrane. An immobilized capture antibody will form a colored line at the specimen (S zone) upon reacting with the colored complex. An internal control line (C zone) is built in to assure that the test has been carried out correctly.

### SAS™ Salmonella Test

SAS™ Salmonella Test is a rapid, visual assay for the detection of salmonella in contaminated food samples after enrichment. Except for a few sterile foods, all foods harbor microorganisms. Many pathogens (bacteria, molds and viruses) can contaminate food during various stages of their handling between production and consumption.

SAS™ Salmonella Test is used for the detection of salmonella in milk products, chicken, eggs, and other food products. The test is based on the superior SAS™ Rapid Immunochromatographic Assay. It provides a high level of sensitivity; detects as low as 1 CFU of Salmonella in 25g of food, which exceeds USDA and AOAC recommendations. The test is simple to run. Just add 4 drops of sample/broth mixture to the device after overnight incubation and read results within 10 minutes. One line indicates negative and two lines indicate positive. The product is stored at room temperature and has a long shelf life.

### Quick Test for Pathogens

Reserchers at Cornell University, the United States, have developed a rapid test to detect E.coli in food samples. the patented test-based on microscopic antibody-coated, marker containing liposomes -has been licenced to Innovative biotechnologies International. Test strips impregnated with liposomes are placed in a solution containing E.coli from a food source. the outside membranes of the liposomes are coated with antibodies to E.coli. When E.coli in the solution gets attached to the antibodies, the liposomes rupture causing the marker-in this case a visisble dye-to be released. the change in colour of the test strip

strip indicates the presence of E.coli. If the sample solution does not contain E.coli or has a very low concentration of E.coli, the liposomes remain intact and no marker is released.  
[www.meatnews.com](http://www.meatnews.com)

## FOOD BORNE BACTERIA TEST KITS

### Microbiological Test Kits

COMPANY	KIT NAME	ANALYTES	CONTACT INFORMATION
Vicam L.P.	Listertest Lift Test	<i>Listeria spp.</i> , including <i>Listeria monocytogenes</i>	313 Pleasant street watertown MA, 02472 USA phone:+1.617.926.7045 Fax:+1.617.923.8055 E-mail:Vicam@vicam.com
Celsis Lumac B.V.	PATH-STIK	<i>Salmonella spp</i>	Celsis Product Group Suite 15, Lyndon House Kings Court Newmarket Suffolk, CB8 7SG United Kingdom  Tel: + 44 (0) 1638 600 151 Fax: + 44 (0) 1638 600 160 info@celsis.co.uk
Diffchamb/ Bioline	Transia Plate <i>Salmonella</i> / Bioline <i>Salmonella</i> ELISA Test Kit	<i>Salmonella spp.</i>	Bioline ApS Fredericiavej 414 7080 Børkop Denmark Tel. +45-76 62 07 09 Fax. +45-76 62 07 05
BioControl Systems, Inc.	SimPlate for TPC	food-borne bacteria	BioControl Systems, Inc. - Worldwide Headquarters 12822 SE 32nd Street Bellevue, WA 98005 Ph: 425.603.1123 Fx: 425.603.0070 Toll-free: 800.245.0113 info@rapidmethods.com
Dynal A.S.	Dynabeads anti- <i>Salmonella</i> Kit	<i>Salmonella spp</i>	Biocell Medicare 9/2 East Patel Nagar New Dehli 110 008 Tel: (91) 11 582 24 49 Fax: (91) 11 576 40 24 biocellindia@satyam.net.in Indonesia
Foss Electric A/S	EiaFoss <i>Salmonella</i>	<i>Salmonella spp.</i>	Sloth Knudsen Casilla de Correo 178 Montevideo Uruguay Tel: +598 (2) 601 25 35 Fax: +598 (2) 601 25 35 cskl@netgate.com.uy
bioMérieux	VIDAS <i>Listeria</i> Assay	<i>Listeria spp.</i>	bioMérieux Canada, Inc. 4535, Dobrin St Laurent - Québec H4R 2L8 tel. (1) 514.336 7321 fax (1) 514.336 6450

## Food Allergen Test Kits

### For Egg Allergen

Alert for egg allergen is used as a screening tool to test for egg residue in food products such as pasta, salad dressing, cake mix and ice cream, and on environmental surfaces.

the test is a sandwich ELISA. Any present egg residue is extracted from samples by blending with hot buffered salt solution (PBS), followed by filtration or centrifugation. Extracted egg residue is sampled and added to antibody-coated wells (capture antibody) where it binds to the antibody. Any unbound residue is washed away and a second, enzyme-labeled antibody detector (detector antibody) is added. Color develops in the presence of bound detector antibody. Red Stop reagent is added and the color of the resulting solution is observed. If the sample well has more blue color than the control well, the presence of bound detector antibody. Red stop reagent is added and the color of the resulting solution is observed. If the sample well has more blue color than the control well, the sample tests positive for egg residue of more than 5 ppm.

### For Milk Allergen

the test is a sandwich ELISA. Any present milk residue is extracted from samples by blending with a hot buffered solution (PBS), followed by filtration or centrifugation. Extracted milk residue is sampled and added to antibody-coated wells (capture antibody) where it binds to the antibody

### BioKits Food Allergen/Protein additive kits

#### Peanut Protein

Peanuts are one of the most allergenic foods, and for peanut sensitive individuals exposure can result in urticaria (mild skin rash), anaphylaxis and in severe cases death. The Peanut Protein Test kit is a highly sensitive (<1 p.p.m.) and specific quantitative ELISA for the analysis of commodities and processed foods to assist in verifying "peanut free" labelling claims and quality control of production processes.

### Soya Protein

A member of the legume family, soya protein is commonly used as a texturiser, emulsifier and protein filler in the food processing industry. It is also a known allergen. The Soya Protein Assay kit is a quantitative ELISA (<0.5% detection limit) which specifically detects soya protein in raw and cooked/canned foods, meats/meat products.

### Wheat Gluten ASSAY

Wheat proteins are used in processed foods to add flavour and to act as a binder e.g. in vegetarian products. Several of these proteins, including gliadins, are allergenic and the major cause of Coeliac Disease.

The Gluten Assay kit is a quantitative ELISA to determine the gluten (gliadin) content of processed and "gluten-free" foods. Both a high sensitivity (16 ppm limit of detection) and AOAC [First Official Action Method] approved protocol (160 ppm limit of detection) are provided.

The Gluten Rapid test kit works like a home pregnancy test. It can be used almost anywhere to screen for the presence of wheat gluten e.g. in food raw materials, processed materials or finished products.

### Milk Proteins Casein

Test kits are available for three of the most important milk proteins. Casein, a mixture of related phospho-proteins, is a major constituent of milk and cheese, comprising some 80% of milk proteins. Beta-lactoglobulin (bLG) is a major whey protein in the milk of ruminants comprising some 10% of the milk proteins. Bovine serum albumin (BSA) is another important milk protein. Each specific Milk Protein Assay kit detects milk proteins (25 ppm limit of detection) in raw and cooked foods and can also assist in the detection of adulteration of sheep/goat dairy products with bovine milk.

[http://www.tepnel.com/ag\\_bio\\_and\\_food\\_testing/allergen\\_products.asp](http://www.tepnel.com/ag_bio_and_food_testing/allergen_products.asp)

## Additional Rapid Test Kits

### Testing of Genetically Modified (GM) Foods

General GM, Soya and Maize Screening Kits  
In order to meet the EU labelling requirements for Novel Foods, Novartis offers several screening protocols for detecting the presence of approved or non-approved GM ingredients in raw materials, processed foods and animal feeds.

#### RoundUp Ready Soya Kit

EU Regulations require the labelling of food products that

contain detectable levels of genetically modified soya protein or DNA. This kit specifically determines modified soya in a variety of processed foods raw materials and animal feeds.

#### Bt-176 Maize Kit

EU Regulations also require manufacturers to label food products that contain detectable levels of modified maize protein or DNA. This kit detects specifically the Novartis Event 176, one of several events that have been approved for sale.

### TEST KITS FOR GM FOOD

COMPANY	KIT NAME	PRIMARY MATRICES	CONTACT INFORMATION
BioteCon Diagnostics GmbH	Bt-176 Maize	corn	e-mail <a href="mailto:bcd@bc-diagnostics.com">bcd@bc-diagnostics.com</a>
BioteCon Diagnostics GmbH	Round-up Ready Soya	soy bean products	-do-
Perkin Elmer	HyPure	seed	45 William Street, 3rd Floor Wellesley, MA, 02481-4078, USA Tel: 781-237-5100
Promega Corporation	Wizard Magnetic DNA Purification System for Food	corn, soybeans, cornmeal, corn starch, soy flour, cornflakes, soy milk	2800 Woods Hollow Road Madison, WI 53711 Tel: (608) 274-4330 <a href="mailto:mccoannel@promega.com">mccoannel@promega.com</a>
Qualicon	BAX for Screening Qualitative GMO	food	DuPont Qualicon Bedford Building, 3531 Silverside Road, Wilmington, DE 19810 U.S.A. Phone: 1.800.863.6842 or 302.695.5300 Fax: 302.695.5301
Scil Diagnostics / GeneScan	GMOIdent Kit LibertyLink™ T25 Corn	plant tissues, seeds, meals, flours, grits, processed and unprocessed foods / feeds, food additives, and unrefined oils	Scil Diagnostics GmbH Fraunhoferstraße 15 Martinsried 82152 Germany Tel: +[49] 89-85 65 19 00
Scil Diagnostics / GeneScan	GMOScreen Advanced Screening System Basic Kit	plant tissues, seeds, meals, flours, grits, processed and unprocessed foods / feeds, food additives, and unrefined oils	-do-
Tepnel BioSystems, Ltd.	BioKits DNA Extraction Kit (GM Foods)	raw, processed, or intermediate food products	Tepnel Biosystems Ltd One Newtech Square Deeside Industrial Park Deeside Flintshire CH5 2NT United Kingdom Tel: +[44] 1244 280202 Fax: +[44] 1244 288402

## ADDITIONAL RAPID TEST KITS

COMPANY	KITNAME	ANALYTE	CONTACT INFORMATION
Diffchamb AB	Transia Fresh Tester	K-value (fish freshness)	Diffchamb Inc. Tel: +1 312 781 6251, 1-866-DIFFCHAMB Fax: +1 312 346 0683 support@diffchamb.com
Dexsil Corp	Tira-Lube TAN	Oxidants	Dexsil Corporation One Hamden Park Drive Hamden, CT 06517-3150 USA 203-248-6523 (fax) info@dexsil.com
Tepnel BioSystems, Ltd	BioKits Raw Meat Species (Chicken)	Meat speciation	Tepnel Life Sciences PLC, Heron House, Oaks Business Park, Crewe Road, Wythenshawe, Manchester M23 9HZ Fax: +44 (0)161 946 2211 Email: info@tepnel.co.uk
Tepnel BioSystems, Ltd.	BioKits Cooked Meat Species (Poultry)	Meat speciation	-Do-
Foss Food Tech Corp	Lactic Acid	Lactic Acid	The Colombo Traders Ltd. 116, D S Senanayake Mawatha, P O Box 1104 Colombo 8 Sri Lanka Tel: +94 (1) 696 121 Fax: +94 (1) 698 832
r-Biopharm GmbH	RIDASCREEN Folsaure	Folic Acid	R-Biopharm AG Dolivostrasse 10 64293 Darmstadt, Germany Phone: +49 6151 8102 - 0, Fax: +49 6151 8102 - 20
Test Kit Technologies / Libra Technologies	Veri-Fry Pro	Fatty Acids	Phone: +1 732.321.5200 Fax: +1 732.321.5203 Mail: 101 Liberty Street Metuchen, NJ 08840-1215 USA. www.libratechnologies.com
Tepnel BioSystems, Ltd.	BioKits Casein Assay	Casein	Tepnel Life Sciences PLC, Heron House, Oaks Business Park, Crewe Road, Wythenshawe, Manchester M23 9HZ Tel: +44 (0)161 946 2200 Fax: +44 (0)161 946 2211 Email: info@tepnel.co.uk

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