



RANDOX

FOOD DIAGNOSTICS

Drug Residue Analysis in Milk
Quantifiable Screening



With nearly 30 years' experience in the market and a dedicated research and development team, Randox Food Diagnostics is committed to the development and manufacturing of high quality and reliable screening solutions for the global milk industry

Randox Food Diagnostics offers excellent tools for on-site screening of drug residues in both milk and milk powder. At the forefront of our product range is our unique multi-analyte testing platform, the Evidence Investigator, which is leading the way in dairy testing. Multi-analyte testing will assist laboratories in reducing labour costs, increasing throughput and guaranteeing improvements in productivity.

Why test for Drug Residues?

There are several veterinary drugs used in dairy producing cattle which help combat and prevent bacterial infections such as mastitis. Without carefully regulated withdrawal periods, drug residues can pass through to the milk.

As a result, consumer confidence is underpinned by a strong reliance on effective milk and milk powder screening.

Radox Food Diagnostics is leading the way in providing reliable, simple to use, less labour intensive methods for the screening and quantification of antimicrobials and anthelmintics in milk.



Multi-Analyte Testing

Randox Food Diagnostics presents the world's only multi-analyte quantitative drug residue screening analyser, the Evidence Investigator. The Evidence Investigator utilises Randox patented Biochip Array Technology allowing simultaneous detection of multiple residues from a single sample.

Biochip Array Technology facilitates the screening of large quantities of samples. Only sending those which exceed the established cut-offs to confirmatory laboratories, helps reduce costs.

Our complete system package for quantitative drug residue screening ensures reliable results that are strongly comparable to LC-MS/MS; along with consolidated testing, significant savings, improved efficiency and quicker results turn-around.



Benefits of the Evidence Investigator

Higher throughput

- 45 samples assessed in under two hours

Meets regulations

- Conforms to all major regulatory requirements

Consolidation of testing

- Multiple test results from a single sample

Reduced false positives

- $\leq 5\%$ non-compliant samples and no reported false negatives

Extensive test menu

- Extensive menu of drug residue tests

Simple sample preparation

- Simple to use, with little technical expertise required

Excellent sensitivity

- Quantitative concentration results (ppb) for each analyte

Cost savings

- Significant cost savings compared to confirmatory methods

The complete package

- Investigator unit, PC, software, thermoshaker & barcode scanner



Quantifiable Screening,
定量檢測

Just add milk
乳品藥物殘留



Limits of Detection

Antimicrobial Array I Plus (EV3775)

Assay	Compound	Specificity (%CR)	LOD (ppb)
Sulphadimethoxine	Sulphadimethoxine	100	0.6
Sulphadiazine	Sulphadiazine	100	0.5
Sulphadoxine	Sulphadoxine	100	0.5
Sulphamethizole	Sulphamethizole	100	0.5
	Sulphachlorpyridazine	13.3	
Sulphachlorpyridazine	Sulphachlorpyridazine	100	0.5
Sulphamethoxyipyridazine	Sulphamethoxyipyridazine	100	0.5
	Sulphaethoxyipyridazine	56	
Sulphamerazine	Sulphamerazine	100	0.5
Sulphisoxazole	Sulphisoxazole	100	0.5
Sulphathiazole	Sulphathiazole	100	0.5
	Sulphadiazine	6.2	
Sulphamethazine	Sulphamethazine	100	2.5
Sulphaquinoxaline	Sulphaquinoxaline	100	0.5
Sulphapyridine	Sulphapyridine	100	0.5
	Sulphasalazine	12.9	
Sulphamethoxazole	Sulphamethoxazole	100	0.5
	Sulphamethizole	92	
	Sulphachlorpyridazine	12.1	
Sulphamonomethoxine	Sulphamonomethoxine	100	2.0
Trimethoprim	Trimethoprim	100	0.5

Antimicrobial Array III CAP only (EV3738)

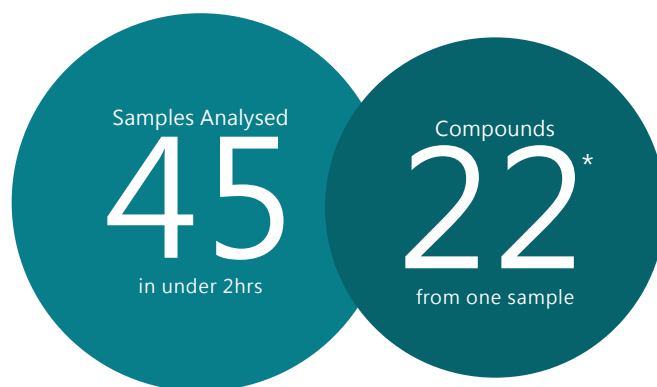
Assay	Compound	Specificity (%CR)	LOD (ppb)
Chloramphenicol	Chloramphenicol	100	0.04
	Chloramphenicol Glucuronide	75	

Beta-Lactam Array Plus (EV3957 A/B)

Assay	Specificity (%CR)	LOD (ppb)
Ampicillin	100	0.75
Amoxicillin	59	
Cloxacillin	52	
Dicloxacillin	70	
Nafcillin	6	
Oxacillin	47	
Penicillin G	388	
Penicillin V	246	
Cefacetril	7	
Cefazolin	6	
Cefoperazone	105	
Cefquinome	12	
Ceftiofur	11	
Cephalonium	237	
Cephapirin	87	0.3
Cephalexin	100	
Cefuroxime	100	

Antimicrobial Array II (EV3524 A/B)

Assay	Compound	Specificity (%CR)	LOD (ppb)
Quinolones	Norfloxacin	100	1.0
	Pefloxacin	84	
	Enrofloxacin	76	
	Ciprofloxacin	59	
	Ofloxacin	57	
	Pipemidic Acid	36	
	Fleroxacin	32	
	Levofloxacin	32	
	Nadifloxacin	27	
	Orbifloxacin	23	
	Danofloxacin	20	
	Marbofloxacin	16	
	Oxolinic Acid	12	
	Difloxacin	8	
	Pazufloxacin	7	
Sarafloxacin	6		
Enoxacin	54		
Ceftiofur	Ceftiofur	100	1.5
	Desfuroylceftiofur	92	
Thiamphenicol	Florphenicol	100	0.5
	Thiamphenicol	53	
Streptomycin	Streptomycin	100	2.0
	Dihydrostreptomycin	182	
Tylosin	Tylosin	100	2.5
	Tilmicosin	37	
Tetracyclines	Tetracycline	100	1.0
	4-epitetracycline	87	
	Rolitetracycline	67	
	4-epioxytetracycline	52	
	Oxytetracycline	52	
	Chlortetracycline	51	
	Demeclocycline	41	
	Doxycycline	23	
	4-epichlortetracycline	20	
Methacycline	11		



* up to

Anthelmintics (EV3770)

Assay	Compound	Specificity (%CR)	LOD (ppb)
Benzimidazoles	Albendazole	100	1.0
	Albendazole Sulphoxide	99	
	Albendazole Sulphone	178	
	Fenbendazole	10	
	Oxfendazole	40	
	(Fenbendazole sulphoxide)		
	Oxibendazole	48	
	Mebendazole	18	
	Oxfendazole Sulphone	14	
	(Fenbendazole sulphone)		
	Parbendazole	30	
	Carbendazim	10	
	Flubendazole	29	
	Hydroxy Flubendazole	2	
	Hydroxy Mebendazole	1	
Amino Benzimidazoles	Albendazole 2-amino sulphone	100	0.3
	Amino-flubendazole	99	
	Amino-mebendazole	141	
Levamisole	Levamisole	100	2.0
Avermectins	Ivermectin	100	0.75
	Abamectin	178	
	Doramectin	75	
	Emamectin Benzoate	254	
	Eprinomectin	191	
Thiabendazole	Thiabendazole	100	0.5
	5-Hydroxythiabendazole	91	
	Cambendazole	800	
Moxidectin	Moxidectin	100	1.6
Triclabendazole	Triclabendazole	100	0.6
	Triclabendazole Sulphoxide	40	
	Keto-triclabendazole	150	
	Triclabendazole Sulphone	1	

Avermectins only Array (EV3842)

Assay	Compound	Specificity (%CR)	LOD (ppb)
Avermectins	Ivermectin	100	0.75
	Abamectin	178	
	Doramectin	75	
	Emamectin Benzoate	254	
	Eprinomectin	191	

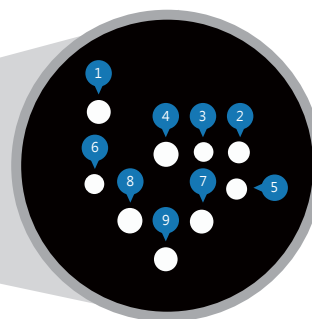
Analysis Times

Assay	Samples Per Kit	Sample Prep	Incubation & Assay	Max Total Time
Avermectins only	45	1 hr 30 mins	2 hrs	3 hrs 30 mins
Antimicrobial I Plus	45	0 hr 20 mins	2 hrs	2 hrs 20 mins
Antimicrobial II	45	0 hr 20 mins	2 hrs	2 hrs 20 mins
Antimicrobial III (CAP)	45	0 hr 10 mins	2 hrs	2 hrs 10 mins
Anthelmintics	45	1 hr 30 mins	2 hrs	3 hrs 30 mins
Beta-Lactam Plus	45	0 hr 10 mins	2 hrs	2 hrs 10 mins

Analysis times based on 20 samples



Example : Antimicrobial Array II (EV3524)



Discrete test sites on each biochip for individual analytes

- 1 Reference spot
- 2 Correction spot
- 3 Quinolones
- 4 Ceftiofur
- 5 Thiamphenicol
- 6 Streptomycin
- 7 Tylosin
- 8 Tetracyclines
- 9 Correction spot

Evidence Investigator Process



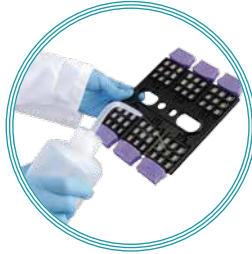
1 Adding reagents

Multiple results can be obtained simultaneously from as little as 25µl of sample. Up to 45 samples and nine calibrators can be analysed per run.



2 Thermoshaker

The customised thermoshaker provides the optimum heating environment for samples.



3 Washing Biochips

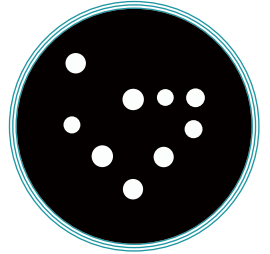
The washing procedure is then quickly and easily, completed over a 10 minute period.



4 Load carrier

Signal reagent is added to each biochip before imaging.

It only takes two minutes for the CCD camera to image each biochip carrier.



5 Discrete test regions

The light signals generated from each of the discrete test regions on the biochip are simultaneously detected.

Evidence Investigator Package



Biochip imaging module



PC & imaging software



Barcode scanner



Thermoshaker



Biochip carrier handling tray

Support Plan

Randox Food Diagnostics is offering full customer support with a 3-5 day installation plan included in the Evidence Investigator package at no extra cost.

This plan includes :

- » Full set up of equipment
- » Training on sample preparation
- » Training on assay procedure and imaging
- » Training on software and results reporting
- » Training on basic troubleshooting

This package also includes 1 year's full warranty, 1 year of 24 hour support and the ability to perform online trouble shooting (internet connection required), if necessary. Additional warranty plans are also available – Protection Plan 'Lite' & Protection Plan 'Pro' (up to four years).





ELISA Test Kits

Radox Food Diagnostics ELISA test kits are used for the screening of drug residues in various matrices and show favourable comparison with confirmatory methods.

ELISA test kits offer an easy to use screening method for milk analysis in laboratories with a lower sample throughput. Each ELISA plate come pre-coated with a specific antibody, removing the coating step and further simplifying the screening process.

Benefits

- » **Single sample preparation across various ELISA kits**
Consolidates testing, reduces labour time and cost
- » **Excellent generic antibodies for several ELISAs**
Quinolones : 17 analytes - β -Lactams : 11 analytes
- » **Rapid analysis with minimal sample preparation**
40 samples can be analysed in 90 mins with minimal technical expertise required
- » **Precision**
Intra and Inter assay precision typically <10%
- » **Simplified set up**
Biotek plate reader available for initial laboratory set up
- » **Excellent shelf life**
Up to 2 year shelf life

ELISA Kits Available

Cat. No	Drug Residue	Format
BF3507	Beta Agonist FAST Milk only	96 tests
SU2148	Beta Agonist	96 tests
BL3448	Beta-Lactam	96 tests
BL1371	Beta-Lactam Standard Accessory Kit	3 x 1ml
CN1469	Chloramphenicol	96 tests
SQ2145	Sulphaquinoxaline	96 tests
SZ2147	Sulphadiazine	96 tests
SM2146	Sulphamethazine	96 tests
QL3454	Quinolones	96 tests
STP3468	Streptomycin	96 tests
CB1418	Clenbuterol	96 tests
RT3451	Ractopamine	96 tests
AFB3511	A α atoxin B1	96 tests
AFM3512	A α atoxin M1	96 tests

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500+

laboratories using Radox
Food Diagnostics technology