

Meat and Seafood Analysis



Better Science, Safer Food

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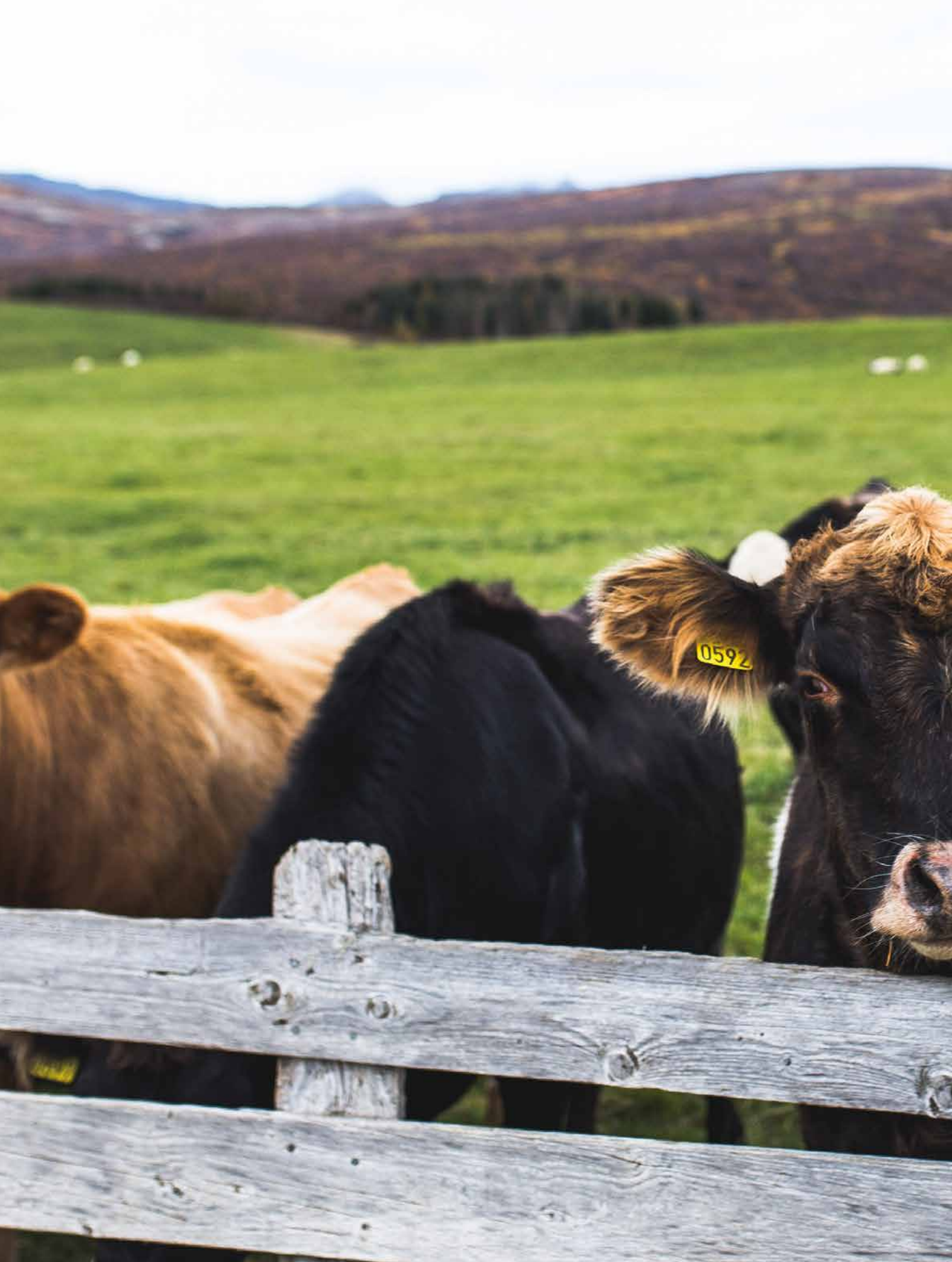
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Technical Support





Helping Improve the Meat & Seafood Industries

Commitment to research and development is the driving force behind our innovative technology, allowing Randox Food Diagnostics to become a global leader in screening for drug residues within meat and seafood. With a comprehensive range of testing solutions, validated across multiple matrices, we are changing the face of food safety and quality worldwide.

There are several different types of veterinary drugs used within meat and seafood cultivation to reduce mortality and improve production. Misuse of these drugs can result in adverse health effects in humans and animals. Residues of these drugs are highly regulated in food production therefore creating the need for reliable testing methods.

For over 35 years, Randox Food Diagnostics have developed a specific product portfolio including ELISA kits and Randox's patented Biochip Array Technology (BAT), providing reliable and economical testing methods to monitor multiple drug residues in meat and seafood.

Putting the food and agricultural industries at the forefront of what we do has allowed Randox Food to become the trusted supplier of the most innovative, multiplexing technology for both meat & seafood processors. Biochip Array Technology allows users to consolidate testing, save time, reduce costs and gain accurate results.

We offer screening solutions within meat and seafood for the following:

- Antibiotics
- Growth Promoters
- Synthetic Steroids
- Anthelmintics
- Coccidiostats
- Triphenylmethane Dyes

Biochip Array Technology

Randox's patented Biochip Array Technology (BAT) provides multiple results from a single, undivided sample with accurate and trusted results on 9mm x 9mm ceramic Biochip. Our unique technology is at the forefront of testing and provides a large number of results in less time when compared to other methods.

Randox's comprehensive test menus allow for the screening of multiple sample types, providing semi-quantitative results. These versatile arrays are ideal for the screening of multiple drug residues within meat & seafood, up to 45 samples for multiple drug residues in under 2 hours. This technology ultimately provides a more informed decision on confirmatory analysis required.

Benefits



The Biochip

Each single 9x9mm Biochip acts as the reaction well for a single sample, replacing multiple ELISA tests.



Consolidation

Each Biochip well provides the user with up to 22 individual results from a single sample.



Excellent Accuracy

Users will be provided with semi-quantitative results (ppb) for each analyte depending on the kit used.

Multiplex Explained

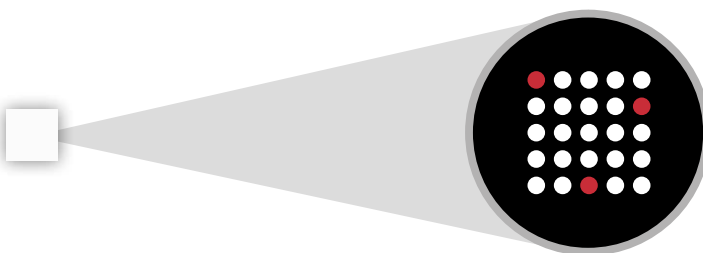
Randox's patented Biochip Array Technology (BAT) is based upon a competitive immunoassay format but provides multiple results from a single sample. BAT utilises a nano-spotting technique to create a versatile array which can accommodate 22 discrete test regions (DTRs).

Each DTR is coated with a single high quality, engineered antibody which is used to detect the presence of multiple compounds. Multiplex screening increases the throughput of testing, greatly reduces labour requirements and provides unrivalled test consolidation.

Key

○ Discrete test region

● Quality control spot



5x5 Biochip Surface

22 discrete test regions on each biochip for individual analytes

Evidence Investigator

The Evidence Investigator is a compact, semi-automated benchtop analyser. Utilising the revolutionary Biochip Array Technology (BAT), the Evidence Investigator is a multi-analyte semi-quantitative analyser. Using BAT, the Evidence Investigator ensures screening for drug residues is accurate and efficient, offering laboratories comparable results to that of LC-MS/MS.



Analyser Process

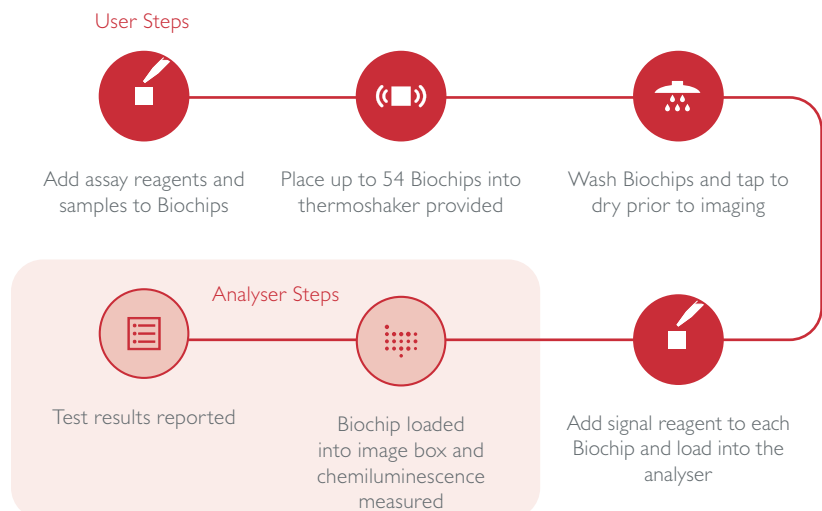




Image Processing

The analyser uses unique image processing software to translate the Relative Light Units (RLU) generated from the chemiluminescent reactions into a qualitative or semi-quantitative result.



On Board Data Analysis

No manipulation of results is required, reducing scope for operator error. The Evidence Investigator provides excellent sensitivity with either a semi-quantitative or qualitative result for each analyte.



Multiplex Technology

Using multiplex technology, the Evidence Investigator can provide simultaneous detection for a wide range of analytes from a single sample.



True Cost Reduction

Multiplex testing reduces the amount of time and labour spent on individual tests as well as associated laboratory costs.

Technical Snapshot

Analyser Description	Semi-automated Biochip Array analyser
Dimensions	750 (h) x 480 (d) x 420 (w) mm
Weight	24kg / 52.9lbs
Biochip Format	1 x Biochip carrier (Holds 9 individual Biochips)
Maximum Throughput	45 samples in under 2 hours*
Accreditation	Internally accredited to full CE & UL certification
Measurement Principal	Competitive techniques with chemiluminescent reaction

*can be increased with multiple thermoshakers (Cat No. EV700-997)

Veterinary Drug Residues in Meat

Residual amounts of antimicrobials, antibiotics or their metabolites found in meat, organs or other animal products, such as milk and eggs are called veterinary drug residues.

Veterinary drugs are administered to livestock for the treatment and prevention of diseases (therapeutic/prophylaxis), improvement of growth and productivity (growth promoters) and modification of physiological functions (such as tranquilizers and aesthetic drugs).

These drugs can be administered via feed consumption, direct oral dosing, injection and/or liquid based products applied to the animals skin for absorption. Veterinary drugs are vital to food producers to ensure good animal husbandry and ultimately to maintain good productivity.

Arrays Available

Antimicrobial Array I Ultra	Antimicrobial Array II Plus
Antimicrobial Array III	Antimicrobial Array III CAP only
Anthelmintics Array	Coccidiostats Array (Tissue)
Coccidiostats Array (Egg)	Growth Promoter Multiple Matrix Screen

Antimicrobial Array I Ultra

Available on Evidence Investigator

Catalogue No - EV3843

Tests per kit - 54

Sample Prep - 20 mins

Assay Time - 2 hours

Kit format - Biochip

LOD Key

T Tissue

Assay	LOD (ppb)		Compound	%CR
Sulphadimethoxine	6.50	T	Sulphadimethoxine	100
Sulphadiazine	3.00	T	Sulphadiazine	100
Sulphadoxine	3.20	T	Sulphadoxine	100
Sulphachlorpyridazine	2.00	T	Sulphachlorpyridazine	100
Sulphamethoxypyridazine	2.00	T	Sulphamethoxypyridazine	100
			Sulphaethoxypyridazine	56
Sulphamerazine	2.00	T	Sulphamerazine	100
Sulphisoxazole	2.00	T	Sulphisoxazole	100
Sulphathiazole	2.00	T	Sulphathiazole	100
			Sulphadiazine	6.2
Sulphamethazine	3.20	T	Sulphamethazine	100
Sulphaquinoxaline	2.00	T	Sulphaquinoxaline	100
Sulphapyridine	3.20	T	Sulphapyridine	100
			Sulphasalazine	12.9
Sulphamethoxazole	1.60	T	Sulphamethoxazole	100
			Sulphamethizole	92
			Sulphachlorpyridazine	12.1
Sulphamonomethoxine	10.00	T	Sulphamonomethoxine	100
Trimethoprim	3.00	T	Trimethoprim	100
Dapsone	3.50	T	Dapsone	100

Antimicrobial Array II Plus

Available on Evidence Investigator

Catalogue No - EV4169

Tests per kit - 54

Sample Prep - 20 mins

Assay Time - 2 hours

Kit format - Biochip

LOD Key

U Urine T Tissue

Assay	LOD (ppb)		Compound	%CR
Quinolones	4.50	U	Norfloxacin*	100
	5.00	T	Pefloxacin	84
			Enrofloxacin	76
			Ciprofloxacin	59
			Ofloxacin	57
			Enoxacin	54
			Pipemidic Acid	36
			Fleroxacin	32
			Levofloxacin	32
			Nadifloxacin	27
			Orbifloxacin	23
			Danofloxacin	20
			Marbofloxacin	16
			Oxolinic Acid	12
			Difloxacin	8
			Pazufloxacin	7
			Sarafloxacin	6
Ceftiofur	3.30	U	Ceftiofur*	100
	4.60	T	Desfuroylceftiofur	92
Thiamphenicol	0.70	U	Florfenicol*	100
	1.30	T	Thiamphenicol	53
Streptomycin	5.00	U	Streptomycin*	100
	7.00	T	Dihydrostreptomycin	99
Tylosin	0.50	U	Tylosin*	100
	0.90	T	Tilmicosin	37
Tetracyclines	1.30	U	Tetracycline*	100
	4.80	T	4-epitetracycline	87
			Rolitetracycline	67
			4-epioxytetracycline	52
			Oxytetracycline	52
			Chlortetracycline	51
			Demeclocycline	41
			Doxycycline	23
			4-epichlortetracycline	20
			Methacycline	11

Antimicrobial Array III

Available on Evidence Investigator

Catalogue No - EV3695

Tests per kit - 54

Sample Prep - 3 hours 30 mins

Assay Time - 2 hours

Kit format - Biochip

Assay	LOD (ppb)		Compound	%CR
AOZ	0.06	T	4-NP-AOZ	100
			Furazolidone	8.3
AMOX	0.08	T	4-NP-AMOX	100
			Furaltadone	40.7
AHD	0.08	T	4-NP-AHD	100
			Nitrofurantoin	41.9
SEM	0.40	T	4-NP-SEM	100

LOD Key

T Tissue

Antimicrobial Array III (CAP Only)

Available on Evidence Investigator

Catalogue No - EV3738

Tests per kit - 54

Sample Prep - 1 hours 45 mins

Assay Time - 2 hours

Kit format - Biochip

Assay	LOD (ppb)		Compound	%CR
Chloramphenicol	0.01	BM	Chloramphenicol	100
			Chloramphenicol Glucuronide	75.1

LOD Key

BM Bovine Muscle

Anthelmintics Array

Available on Evidence Investigator

Catalogue No - EV3770

Tests per kit - 54

Sample Prep - 1 hours 30 mins

Assay Time - 2 hours

Kit format - Biochip

LOD Key

BM Bovine Muscle

Assay	LOD (ppb)		Compound	%CR
Benzimidazoles (BZS)	1.00	BM	Albendazole	100
			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 (ABZ)	0.15	BM	Albendazole 2-amino sulphone	100
			Amino-flubendazole	99
			Amino-mebendazole	141
Levamisole (LVM)	6.50	BM	Levamisole	100
Avermectins (AVM)	0.75	BM	Ivermectin	100
			Abamectin	178
			Doramectin	75
			Emamectin Benzoate	254
			Eprinomectin	191
Thiabendazole (TBZ)	1.20	BM	Thiabendazole	100
			5-Hydroxythiabendazole	91
			Cambendazole	800
Moxidectin (MXD)	1.60	BM	Moxidectin	100
Triclabendazole (TCBZ)	0.80	BM	Triclabendazole	100
			Triclabendazole Sulphoxide	40
			Keto-triclabendazole	150
			Triclabendazole Sulphone	1

Coccidiostats Array (Tissue)

Available on Evidence Investigator

Catalogue No - EV4132

Tests per kit - 54

Sample Prep - 1 hours 30 mins

Assay Time - 2 hours

Kit format - Biochip

LOD Key

T Tissue

Assay	LOD (ppb)		Compound	%CR
Lasalocid	5.50	T	Lasalocid	100
Nicarbazin	1.25	T	Dinitrocarbanilide Nicarbazin	100 98
Maduramicin	1.60	T	Maduramicin	100
Salinomycin	7.00	T	Salinomycin Narasin	100 130
Monensin	3.00	T	Monensin Monensin A	100 89
Halofuginone	1.50	T	Halofuginone	100
Diclazuril	5.00	T	Diclazuril Clazuril	100 12
Toltrazuril	4.00	T	Toltrazuril Sulphone Toltrazuril Sulphoxide Toltrazuril	100 145 7

Coccidiostats Array (Egg)

Available on Evidence Investigator

Catalogue No - EV3772

Tests per kit - 54

Sample Prep - 1 hours 30 mins

Assay Time - 2 hours

Kit format - Biochip

LOD Key

E Egg

Assay	LOD (ppb)		Compound	%CR
Lasalocid	2.00	E	Lasalocid	100
Nicarbazin	0.20	E	Dinitrocarbanilide	100
			Nicarbazin	98
Imidocarb	0.10	E	Imidocarb	100
Toltrazuril	1.50	E	Toltrazuril Sulphone	100
			Toltrazuril Sulphoxide	145
			Toltrazuril	7
Maduramicin	0.70	E	Maduramicin	100
Salinomycin	0.75	E	Salinomycin	100
			Narasin	130
Clopidol	90.0	E	Clopidol	100
			Nequinatate	135
Monensin	0.60	E	Monensin	100
			Monensin A	89
Robenidine	4.50	E	Robenidine	100
Decoquinatate	10.0	E	Decoquinatate	100
Halofuginone	1.00	E	Halofuginone	100
Diclazuril	1.80	E	Diclazuril	100
			Clazuril	12

Growth Promoter Multiple Matrix Screen

Available on Evidence Investigator

Catalogue No - EV3726

Tests per kit - 54

Sample Prep - 4 hours 30 mins

Assay Time - 2 hours

Kit format - Biochip

LOD Key

T Tissue **UE** Urine (Extraction Method)

UD Urine (Dilution Method - Rapid Screen)

Assay	LOD (ppb)		Compound	%CR
β-Agonists	0.74	UD	Clenbuterol	100
	0.20	UE	Mapenterol	113
	0.20	T	Carbuterol	104
			Brombuterol	88
			Salbutamol	70
			Cimbuterol	54
			Mabuterol	41
			Terbutaline	22
			Methyl-clenbuterol	20
			Pirbuterol	15
Boldenone	1.83	UD	17-β-Boldenone	100
	0.80	UE	1,4 Androstadiene - 3, 17- dione	55
	0.50	T	17-α-Boldenone	15
			Boldenone glucuronide	15
Corticosteroids	0.91	UD	Dexamethasone	100
	0.20	UE	Betamethasone - 21- acetate	133
	0.40	T	Flumethasone	57
			Betamethasone	31
			Dexamethasone - 21- acetate	27
Nandrolone	7.00	UD	19-Nortestosterone (17β)	100
	2.00	UE	19-Nor-4-Androstene - 3, 17 - dione	143
	1.40	T	Trenbolone Acetate	109
			Trenbolone (17-β)	70
			19-Nortestosterone (17β) sulphate	55
			19-Nortestosterone (17α)	27
			19-Nortestosterone β glucuronide	26
Ractopamine	1.43	UD	Ractopamine	100
	0.20	UE	Ractopamine hydrochloride	100
	0.30	T		
Stanozolol	1.99	UD	Stanozolol	100
	0.40	UE	16 β-Hydroxystanozolol	45
	0.40	T		
Stilbenes	6.00	UD	Hexestrol	100
	0.40	UE	Diethylstilbestrol glucuronide	289
	0.90	T	Diethylstilbestrol	105
			Dienestrol	72
Trenbolone	0.46	UD	Trenbolone (17-β)	100
	0.40	UE	Trenbolone (17-α)	21
	0.10	T		
Zeranol	1.47	UD	Zeranol	100
	0.80	UE	α – Zearalenol	10
	0.30	T	β – Zearalenol	5.3
			Zearalenone	<1.4
			Zearalanone	<0.4

ELISA Meat Testing Kits

Accurate, fast, simple to use and trusted globally all sum up the world class ELISA range that has been developed and manufactured by Randox for over 30 years. This wealth of experience has led to an array of drug residue ELISAs being specifically designed for the global food industry.

Drug Residue	Cat. No
19-Nortestosterone/Trenbolone	NT2105
Avermectins	AV3477
Bacitracin	RLS9222
Beta-Agonist	SU2148
Chloramphenicol	CN1469
Chloramphenicol FAST*	CN10171
Clenbuterol	CB1418
Enrofloxacin/Ciprofloxacin**	EC3473
Phenylbutazone	PB3456
Quinolones	QL3454
Ractopamine	RT3451
Stilbenes	SJ2152
Tetracycline Sensitive**	TCS10117A
Trenbolone	TB2106
Zilpaterol**	ZP3483

*FAST kits provide analysis under 60 mins

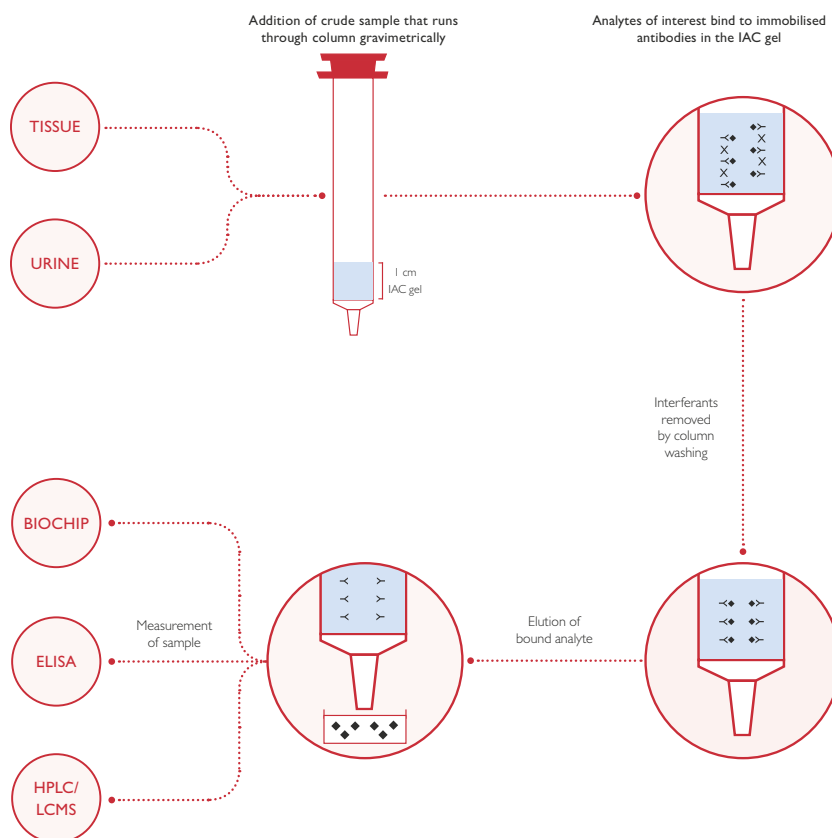
**Also provides analysis under 60 mins

Immunoaffinity Columns

Sample clean-up is an essential part of drug residue testing, whether it is performed by Biochip Array Technology, ELISA, confirmatory methods or any other technique. To compliment the range of testing platforms for measuring drug residues, Randox Food Diagnostics offer a multiplex approach to sample clean up with our Growth Promoters IAC.

Cat No.	Product Description	Pack Size
GPI821	Growth Promoters (boldenone, zeranol, ractopamine, corticosteroids, nandrolone, stilbenes, trenbolone, stanozolol, β -agonists)	5 columns* (Minimum 50 samples)
SJ2154	Stilbenes (diethylstilbestrol, hexestrol, dienestrol)	5 columns* (Minimum 50 samples)

*Reusable



Seafood Testing

Drug Residues in Seafood

Commonly used antibiotics in the aquaculture industry today to prevent disease outbreaks include; oxytetracycline, sulphamerazine, sulphadiazine, trimethoprim and furazolidone.

Triphenylmethane Dyes

Dyes are widely used to treat the water in the aquaculture industry to control fungal attacks & parasites.

ng

Aquaculture Feed

In aquaculture, feed additives containing drug residues are added to fish pellets to prevent diseases and maintain fish health.

Direct Antibiotic Dosing

A variety of antibiotics are often added to aquaculture water to treat diseases caused by bacterial infections.



Biochip Seafood Testing Kits

Antibiotic residues spread to sea life through triphenylmethane dyes, feed additives in pellets and whole antibiotics added to the water directly. The overuse of antibiotics in the treatment of aquaculture (among other agricultural uses) could create public health issues through direct food consumption causing antimicrobial resistance.

Randox Food Diagnostics offer excellent cost effective screening solutions for food analysis including a range of aquatic food sources such as fish, prawns and shrimp.



Antimicrobial Array III

Available on Evidence Investigator

Catalogue No - EV3695
Tests per kit - 54
Sample Prep - 3 hours 30 mins
Assay Time - 2 hours
Kit format - Biochip

Assay	LOD (ppb)		Compound	%CR
AOZ	0.06	PS	4-NP-AOZ	100
			Furazolidone	8.3
AMOZ	0.08	PS	4-NP-AMOZ	100
			Furaltadone	40.7
AHD	0.08	PS	4-NP-AHD	100
			Nitrofurantoin	41.9
SEM	0.35	PS	4-NP-SEM	100

LOD Key

PS Prawn/Shrimp



Antimicrobial Array III (CAP Only)

Available on Evidence Investigator

Catalogue No - EV3738
Tests per kit - 54
Sample Prep - 1 hours 45 mins
Assay Time - 2 hours
Kit format - Biochip

Assay	LOD (ppb)		Compound	%CR
Chloramphenicol	0.01	PS	Chloramphenicol	100
			Chloramphenicol Glucuronide	75.1

LOD Key

PS Prawn/Shrimp



ELISA Seafood Testing Kits

Offering excellent cross-reactivity and limits of detection, Randox Food Diagnostics develop the highest quality ELISAs available on the market. Manufactured using our own antibodies in the United Kingdom, our ever-expanding test menu offers a rapid and reliable screening solution for the seafood industry.

Drug Residue	Cat. No
AHD FAST*	NF3463
AMOX FAST*	NF3462
AOZ FAST*	NF3465
SEM FAST*	NF3461
Chloramphenicol	CN1469
Chloramphenicol FAST*	CN10171
Doxycycline Sensitive**	DXS10119 A/B
Enrofloxacin/Ciprofloxacin**	EC3473
Malachite Green FAST*	MG10108 A/B
Oxytetracycline Sensitive**	OX10118 A/B
Quinolones	QL3454
DNSH**	DNS10592

*FAST kits provide analysis under 60 mins

**Also provides analysis under 60 mins

Local Engineers. Global Coverage

Randox Food Diagnostics provide customers with an unrivalled support service. A team of highly trained specialists are on-hand to deal with any technical and service issues you may have.



Global Offices

We have 25 international offices acting as direct points of contact for customers

100+
Specialists

Randox has over 100 engineers and tech support specialists placed around the world to ensure an efficient response to customer requests

700+

Scientists

Randox has more than 700 scientists placed around the world, dedicated to providing a quality product offering



Global Distributors

We have official Randox Food Diagnostics technical distributors in over 100 countries



Aftercare

We offer the ultimate after-care support with tailored service packages to suit your available budget



Notes



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1,000+

laboratories using
Biochip technology

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