

codex alimentarius commission

FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD HEALTH
ORGANIZATION

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Agenda Item 9(b)

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON RESIDUES OF VETERINARY DRUGS IN FOODS

Twelfth Session

Washington, D.C., 28 - 31 March 2000

METHODS OF ANALYSIS FOR VETERINARY DRUGS

IDENTIFICATION OF ROUTINE METHODS OF ANALYSIS AND SAMPLING FOR VETERINARY DRUGS RESIDUES IN FOODS

(Prepared by Canada and the United States of America)

Compilation of Information on Analytical Methods

1. The Delegation of the United States reported to the 11th Session on an initiative to gather information on analytical methods used by member countries for monitoring the occurrence of veterinary drug residues in their national drug residue control programs. This would identify analytical methods which have been validated and meet performance specifications acceptable to national authorities, thereby contributing to the Committee's efforts to identify suitable analytical methods to support MRL recommendations.
2. A circular letter (CL1998/7-RVDF (March 1998)) requesting such information was sent to all member countries of the Commission and the initial responses were reported at the 11th Session. The collection of information has continued.
3. Member governments were provided a list of 93 veterinary drugs and asked to list the method principle, species and matrices to which the method applied, limit of quantification (LOQ) and method purpose (screening, quantification or confirmation). Twenty-seven member countries responded to the requests. The information will assist the *ad hoc* Working Group on Methods of Analysis and Sampling to assess the applicability of such methods for CCRVDF purposes and to elicit greater detail on performance characteristics and validation status, as required.
4. Additional information will be contained in the Report of the *ad hoc* Working Group to be presented to the 12th Session.

APPENDIX

The purpose for the initial analytical method survey was to provide information that would indicate the existence of analytical methods that were in use in food residue control programs and which may be potentially applicable to analytical method initiatives of the Committee. It is hoped that where appropriate, this initial information might be useful in making a separate request to the operational laboratories to elicit greater technical detail about the methods being used and validation data for these methods. This could provide a greater list of analytical methods to be drawn up that may have potential for CCRVDF recommendation.

ANALYTICAL METHOD CAPABILITY FOR ANIMAL DRUG RESIDUES-1

Drug	Australia	Finland	France	Malaysia	Mexico	Slovak Republic	South Africa 1	South Africa 2	United Kingdom	United States	Uruguay
Abamectin	HPLC		TLC, HPLC						HPLC		
Albendazole	HPLC		TLC HPLC		HPLC			HPLC	ELISA, HPLC, LC-MS	HPLC GC-MS	HPLC
Azaperone		HPLC	HPLC				HPLC		HPLC		
Benzyl penicillin	MICRO HPLC	HPLC	Micro,HP LC,LC-MS	Micro	Micro		Micro, HPLC	HPLC	EIA, HPLC, Charm 2 LC-MS	Micro	Micro
Carazolol			HPLC			HPLC	HPLC		HPLC		
Carbadox		GLC	HPLC						GC-MS, HPLC	GC-MS	
Ceftiofur sodium			HPLC				Micro, HPLC			HPLC	
Chloramphenicol	GC	ELISA,G LC	HPLC, LC-MS, GC-MS	HPLC	GC	ELISA, GLC	TLC, HPLC		Charm, HPLC, ELISA, GC-MS	GC/EC/MS	GLC
Chlortetracycline	MICRO HPLC	HPLC	Micro, HPLC, LC-MS, ELISA	HPLC	Micro	ELISA, GC-MS	Micro, HPLC	HPLC	ELISA, HPLC, LC-MS	Micro HPLC	Micro
Clenbuterol	ELISA HPLC	ELISA,G C-MS		GC-MS			ELISA, GC-MS		ELISA, GC-MS	GC-MS	RIA

Drug	Australia	Finland	France	Malaysia	Mexico	Slovak Republic	South Africa 1	South Africa 2	United Kingdom	United States	Uruguay
Closantel	HPLC								HPLC		
Cyfluthrin	GC/GC-MS										
Cypermethrin	GC								GLC, HPLC	GC-MS	GLC
α -cypermethrin	GC/GC-MS										GLC
Danofloxacin			HPLC, LC-MS				Micro, HPLC				
Dexamethasone									EIA	HPLC/GC-MS	
Diclazuril											
Dihydro-streptomycin	MICRO HPLC	HPLC	Micro		Micro		Micro, HPLC		ELISA, TLC	Micro	
Diminazine										HPLC	
Doramectin	HPLC		TLC						HPLC	HPLC	
Enrofloxacin		HPLC	HPLC, LC-MS				Micro, HPLC		ELISA, HPLC		
Eprinomectin	HPLC								HPLC		
Estradiol		ELISA, GC-MS				RIA	RIA		RIA, DELFIA		
Febantel	HPLC		TLC, HPLC						ELISA, HPLC		
Fenbendazole	HPLC		TLC, HPLC		HPLC			HPLC	ELISA, HPLC, LC-MS	HPLC GC-MS	HPLC
Fluazuron	GC/GC-MS										
Flubendazole								HPLC	ELISA, HPLC		
Flumequin			HPLC								
Gentamicin			HPLC, LC-MS				Micro, HPLC			HPLC	

Drug	Australia	Finland	France	Malaysia	Mexico	Slovak Republic	South Africa 1	South Africa 2	United Kingdom	United States	Uruguay
Streptomycin	MICRO HPLC	HPLC	Micro				Micro, HPLC		TLC, ELISA, HPLC, Charm	Micro	Micro
Sulphadimidine	TLC HPLC	TLC,HPLC	TLC, HPLC	TLC		HPLC	ELISA, TLC, HPLC	HPLC	TLC, ELISA, HPLC, GC-MS	GC TLC GC-MS	HPLC
Testosterone		ELISA,G C-MS				ELISA, GC-MS	RIA		HPLC, RIA, DELFLA		
Tetracycline	MICRO HPLC	HPLC	Micro, HPLC, LC-MS	HPLC	Micro	HPLC	Micro, HPLC	HPLC	ELISA, HPLC, LC-MS	Micro HPLC	Micro
Thiabendazole	HPLC				HPLC		HPLC	HPLC	HPLC, ELISA, LC-MS	HPLC GC-MS	
Thiamphenicol									GC-MS		
Tilmicosin	MICRO HPLC		HPLC, LC-MS				Micro, HPLC		HPLC	HPLC	
Trenbolone Acetate	ELISA HPLC	ELISA,G C-MS				ELISA, GC-MS	GC-MS		ELISA, GC-MS, LC-MS		RIA, GC-MS
Triclabendazole	HPLC								HPLC		
Zeranol	GC-MS	ELISA,G C-MS			GC-MS	ELISA, GC-MS	GC-MS		GC-MS, ELISA		RIA, GC-MS

ANALYTICAL METHOD CAPABILITY FOR ANIMAL DRUG RESIDUES-2

Drug	Brazil	Canada	Costa Rica	Denmark	Germany	Japan	Malta	New Zealand	Poland	Switzerland	Thailand
Abamectin	HPLC/FI							HPLC/FI		HPLC/FI	
Albendazole		HPLC	HPLC			HPLC-UV	Elisa, HPLC	HPLC-UV	HPLC		
Azaperone				HPLC			HPLC		TLC, HPLC		
Benzyl penicillin	Bioassay, Micro	HPLC LC-MS	Micro	MICRO HPLC	GC	Micro		Bioassay, HPLC	MICRO		
Carazolol			HPLC	HPLC	HPLC				TLC, HPLC		
Carbadox		GC, GC-MS				HPLC-UV		GC-ECD			
Ceftiofur sodium											
Chloramphenicol	Elisa, HPLC-UV	GC, ELISA	Elisa,GC	ELISA	Elisa, GC-MS	Micro	HPLC	IA, GC-MS	GC	GC-MS	HPLC
Chlortetracycline	Bioassay Micro/TLC	HPLC	Micro	MICRO HPLC	HPLC-	Micro	HPLC	Bioassay HPLC	HPLC	HPLC-FI	HPLC
Clenbuterol	Elisa, GC-MS	HPLC LC-MS-MS		ELISA GC-MS			Elisa GC-MS	IA GC-MS	TLC HPLC		TLC, Elisa
Closantel						HPLC-UV		HPLC-UV			
Cyfluthrin								GC-ECD GC-MS			GC-ECD
Cyhalothrin								GC-ECD GC-MS			GC-ECD
Cypermethrin							GC-MS	GC-ECD GC-MS			GC-ECD

Drug	Brazil	Canada	Costa Rica	Denmark	Germany	Japan	Malta	New Zealand	Poland	Switzerland	Thailand
Alpha cypermethrin								GC-ECD GC-MS			GC-ECD
Danofloxacin										HPLC-FI	
Delta methrin							GC-MS	GCECD GC-MS			GC-ECD
Dexamethasone		HPLC		ELISA				HPLC			
Diclazuril											
Dihydrostreptomycin		HPLC		MICRO				Bioassay Electrophoresis			Micro FPT Elisa
Diminazine											
Doramectin								HPLC-FI		HPLC-FI	
Enrofloxacin		HPLC		MICRO HPLC	HPLC		Elisa HPLC		HPLC	HPLC-FI	Micro (FPT) HPLC
Eprinomectin								HPLC-FI			
Estradiol				RIA GC-MS							
Febantel		HPLC						HPLC- UV	HPLC		
Fenbendazole		HPLC	HPLC				Elisa HPLC	HPLC- UV	HPLC		
Fluazuron											GC-ECD
Flubendazole			HPLC			HPLC- UV		HPLC- UV			
Flumequin							HPLC			HPLC-FI	
Gentamicin		ELISA		MICRO				Bioassay		HPLC post col deriv	Micro (FPT)
Imidocarb											
Isometimidium						HPLC- UV					
Ivermectin	HPLC-FI	HPLC	HPLC	HPLC	HPLC	HPLC-FI	HPLC	HPLC-FI	HPLC	HPLC-FI	

Drug	Brazil	Canada	Costa Rica	Denmark	Germany	Japan	Malta	New Zealand	Poland	Switzerland	Thailand
Levamisole				GC HPLC			Elisa,HPLC	HPLC-UV			
Metriforate				GC HPLC							
Moxidectin						HPLC-FI		HPLC-FI		HPLC-FI	
Neomycin	Bioassay, Micro	ELISA	Micro	MICRO				Bioassay HPLC-IA	MICRO	HPLC- post col deriv	Micro (FPT)
Nicarbazin	HPLC-UV				HPLC	HPLC-UV		HPLC-UV			HPLC
Olaquinox				HPLC		HPLC-UV		GC-ECD			HPLC
Oxfendazole		HPLC	HPLC				Elisa HPLC	HPLC-UV	HPLC		
Oxytetracycline	Bioassay Micro TLC	HPLC	Micro	MICRO HPLC	HPLC	HPLC-FI	HPLC	Bioassay HPLC	HPLC	HPLC-FI	Bioassay HPLC
Permethrin							GC-MS				GC-ECD
Phoxin											
Porcine Somatotrophin											
Procaine penicillin	Bioassay Micro	HPLC GC-MS				Micro		Bioassay HPLC			
Progesterone				RIA					HPTLC		
Sarafloxacin		HPLC									
Spectinomycin											
Spiramycin				MICRO HPLC		HPLC-UV Micro					
Streptomycin	Bioassay Micro	HPLC				Micro		Bioassay Electrophoresis	MICRO		Micro (FPT) Elisa

Drug	Brazil	Canada	Costa Rica	Denmark	Germany	Japan	Malta	New Zealand	Poland	Switzerland	Thailand
Sulphadimidine	TLC/Densitometry	TLC GC-MS	Elisa	ELISA TLC, HPLC	HPLC Elisa	HPLC-UV	HPTLC GC-MS	TLC HPLC-FI	TLC HPLC	HPLC post col deriv	HPLC
Temephos								TLC HPLC			
Testosterone				RIA GC-MS				HPLC GC-MS	ELISA		
Tetracycline		HPLC		MICRO HPLC	HPLC	Micro	HPLC	Bioassay HPLC	HPLC	HPLC-FI	HPLC
Thiabendazole		HPLC				HPLC-UV	Elisa HPLC		HPLC		
Thiamphenicol						HPLC-UV					HPLC
Tilimicosin		HPLC GC-MS									
Trenbolone Acetate		HPLC LC-MS-MS		ELISA GC-MS		HPLC-UV		HPLC GC-MS	HPTLC		
Triclabendazole						HPLC-UV		HPLC-UV			
Zeranol		GC-MS		RIA		HPLC-UV	HPTLC	HPLC GC-MS	HPTLC	GC-MS	