AOAC INTERNATIONAL

The Scientific Association Dedicated to Analytical Excellence®

Compilation of Analytical Methods and Quality System Issues Relating to the Aquaculture of Seafood

(Response from 8 out of 11 organizations)

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Chemo-Therapeutics (multi-residue)	Status in US for Aquaculture	Matrices	Techniques
Chloramphenicol	Banned in US	Unclear if methods are needed for all seafood or selected seafood.	Rapid Detection Test Methods (such as ELISA) HPLC fluorescence LC/MS/MS confirmatory methods Multi-residue screening methods
Furazolidone, nitrofuranzone (and other nitrofurans)	Banned in US		
Clenbuterol	Banned in US		
Diethylstilbestrol (DES)	Banned in US		
Dimetridazole, ipronidazole, and other nitroimidazoles	Banned in US		
Glycopeptides	Banned in US		
Chorionic gonadotropin (HCG)	Approved for use		
Formalin	Approved for use		
Oxytetracycline	Approved for use		
Sulfadimethoxine / ormetoprim	Approved for use		
Sulfamerazine	Approved for use		
Tricaine	Approved for use		
Methanesulfonate,MS222	Approved for use		
Florfenicol	Approved for use		
Hydrogen peroxide	Approved for use		
Quinolones (fluoroquinolones)	Banned in US	Finfish(e.g. salmonids, catfish, tilapia, eel, basa) and shellfish (e.g. lobster, shrimp, crawfish, crab).	
Tetracyclines			
Sulfonamides			
Triphenylmethane dyes: malachite green, gentian violet, leucomalachite green, crystal violet			
Chloromycetin		Vietnamese Catfish or Basa Tilapia Turbot	
Penicillin			
Streptogramin			

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Species of Fish Identification	Issue	Technique
Grouper	Fish Substitution	DNA Sequencing IEF Gel electrophoresis
Escolar (SeaBass)		
Basa (Vietnamese Catfish)		
Red Snapper and other snapper		
Walleye		
Perch (Pike /Euro)		
Flounder		
Sole		
Puffer fish		
Turbot		
Tuna		
Halibut		
Cod		
Mahi Mahi		
Shrimp		
Catfish		
Amberjack		
Whitefish		
Salmon		

Others:	Matrices	Technique
Decomposition / histamine	All Seafood	
Foreign Objects Foreign Objects (shotgun pellet, box cutter blade…)	All Seafood	
Tripolyphosphates		
Biological hormones	Tilapia	Rapid Detection Method
Other water enhancement additives		
Cloning Detection	Finfish, crustaceans	
Genetic modification (GMO)		DNA fingerprinting
Quantitative method to determine added phosphate	Seafood	
Method to determine flesh percentage	enrobed seafood products	

Pesticides (multi-residue)	Matrices	Technique
Rotenone		
Organotin compounds		
Emamectin	Salmonids	Rapid Detection Method

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Allergens:
Hake
Halibut
Haddock
Shrimp
Cod
Mackerel
Tuna

Natural Toxins:
Tetrodotoxin
Ciguatoxin
Brevetoxin
Okadaic acid
Paralytic Shellfish Poisoning (PSP)
Gempylotoxin

Microbial Pathogens:
Salmonella
Shigella
Clostridium botulinum
Listeria monocytogenes
Vibrios
Hepatitis A
Norwalk virus
Staphylococcus aureus

Comments:

1) Need Training, particularly overseas at source prior to shipment to US.

2) Need Fast, accurate, and cost effective methods.

3) The race to test to fractions of PPB in order to enforce zero tolerance regulations has cost private industry substantial monies but worse has seen the forced destruction of hundreds of thousand of pounds of products that were perfectly wholesome because the testing can show inconsequential traces of an unapproved antibiotic, some of which can occur naturally.

4) Need to better understand how rapid methods correlate to Official Methods.

5) Need Proficiency Testing, particularly for chemotherapeutics to ensure reliability of testing results and competency of testing labs.

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