

Legal and Judicious Use of Drugs and Therapeutants in Aquaculture

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Drug and Therapeutant Use in Aquaculture



Once upon a time...and not all that long ago.....

- Fisheries manager's access to drugs and chemicals was limited only by their active and inventive imaginations
- If you could get your hands on it, you could use it!!
- Home and Ranch, Chemical Supply Companies, local discount stores, hardware stores, etc. were all “fair game” in the quest for needed drugs and chemicals



However, in the early 1990's a decree went out that changed everything.....and feast became famine

- FDA...who had very conveniently been looking the other way....decided the time had come for aquaculture to be regulated
- FDA's decision left aquaculture with only 3 therapeutants and a single anesthetic that were “approved” for use...and use of these drugs was severely restricted by species, life stage, specific pathogen, and use-pattern



“Mechanisms” currently available for legal use of drugs in aquaculture

- FDA-approved drugs (full and conditional approvals)
- Low Regulatory Priority Drugs
- Compounds with *Deferred Regulatory Status*
- Extra-label drug use policy
- Compassionate INAD exemptions



Judicious

- ❖ **Definition: Having or exhibiting good judgment or sound thinking**
 - ❖ **Synonyms: wise, sensible, prudent**
- ❖ **AVMA Judicious Antimicrobial Use Principles**
 - **Accept responsibility for helping client design management, immunization, production unit, and nutritional programs to reduce the incidence of disease and the need for antimicrobial treatment**



Judicious Use of Therapeutants

- ❖ Treat as a last resort
- ❖ Match “diagnosis” with situation; or utilize historical data for a given facility/fish species/time of year
- ❖ Establish a valid veterinarian/patient/client and fish health specialist relationship
- ❖ Select appropriate therapeutant to control mortality
- ❖ Deliver appropriate treatment by following all use guidelines (i.e., dose + duration + frequency) **conduct a small bioassay trial if you're unsure**



Judicious Use of Therapeutants

- ❖ Fate of treated fish
- ❖ Food fish - adherence to withdrawal time before release or slaughter
- ❖ “More is not necessarily better”
- ❖ Adherence to discharge requirements (NPDES – Federal and state agencies)
- ❖ Familiar with EPA Hatchery Effluent Guidelines



Approved Drugs (full drug approval)



Drug and Therapeutant Use in Aquaculture



Approved drugs

❖ Romet 30[®] and TC[®]

- Catfish – HS, and pseudomonas disease
- Salmonids – furunculosis

❖ Terramycin 200 for Fish[®]

- Catfish – HS, and pseudomonas disease
- Salmonids – ulcer disease, furunculosis, HS, and pseudomonas disease

❖ Aquaflor[®] - VFD Drug

- Catfish - ESC
- FW salmonids – CWD
- FW salmonids - furunculosis

❖ MS – 222

(four families of fish)

❖ 35% PEROX AID[®]

- Fungicide – All FW eggs
- BGD – FW salmonids
- Ex. Col. – CW fish/ccf

❖ Formalin

- Parasiticide – all FW fish
- Fungicide – all FW eggs

❖ OTC (skeletal marking)

(all finfish fry and fingerling)

❖ Chorulon[®] (HCG)

(all fish)



Approved Drugs - Summary

- There is a shortage of approved drugs
.....particularly if you are feeling poorly and you are not a salmonid or a catfish!!
- The list is growing!
- Approvals for “new” oral antibiotics will be as VFD’s



Conditional Drug Approval

(under MUMS)

- Provides for animal marketing after all **safety and manufacturing** components have been met.
- Only component missing is **effectiveness**.
- Sponsor has **5 yrs** to complete effectiveness component (for each claim) to achieve full drug approval



Aquaflor[®]-CA1

- News Flash – April 18, 2007!!!: Sponsor (SPAH) gained a conditional approval -- **the first of its kind for any food-animal therapeutic** -- for use of Aquaflor[®]- CA1 to control mortality in **catfish caused by Columnaris**.
- Sponsor may seek conditional approval for:
 - **Salmonids - BKD, Enteric Redmouth, etc.**
- Conditional approvals - VFD drug
- CVM requires **separate product labeling** and **separate “lots”** for each claim



Why VFD's

- To more closely **control** new therapeutic products (primarily antibiotics) and their use in food animals
 - New classification applies only to new therapeutants approved after 1999 and administered in feed
 - All products approved before 1999 – still Over-the-Counter
- Obtain VFD drugs through **normal feed distribution channels** – but orders **require a signed VFD from a licensed vet.**
- Falls somewhere **between Over-the-Counter and prescription drugs...**but probably closer to a prescription.



Control???

- VFD regulations – developed by a coalition of animal health experts.
- Help reduce antibiotic resistance and prolong effectiveness of new antimicrobials through judicious use.
- Feed mill holding a Medical Feed Mill License – needs to file a notification with FDA that it will be distributing VFD drugs in feed.
- No extra-label use allowed!



Steps to obtain and feed VFD drugs

- **Contact veterinarian** for diagnosis and treatment.
- **Vet works** within vet/patient/client relationship to determine need for VFD drug.
- Vet issues a **signed VFD form** to hatchery & feed mill.
- Hatchery uses **VFD form to order** medicated feed.
- **All parties** retain copies of signed VFD order for **2 yrs.**



Low Regulatory Priority (LRP) Drugs



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LRP Drugs

- **Consideration for LRP status originates from a request from outside of CVM**
- **Candidate compounds are typically quite innocuous (e.g., salt, ice, onion, etc.)**
- **FDA made determination based on review of all available data**
- **16 compounds are currently on the LRP list**



LRP Drugs

- **LRP status does not mean “carte blanche” use of a particular compound**
 1. **Must be used for indication listed**
 2. **Must be used according to good management practices**
 3. **Must be used at the prescribed level**
 4. **Must be of appropriate grade for use in food animals**
 5. **Only if an adverse effect on the environment is unlikely**

- **LRP drug use is not considered to be “approved” drug use, but rather low enforcement priority....regulatory action unlikely**



LRP Drugs

- ❖ Acetic acid
- ❖ Calcium oxide
- ❖ Garlic
- ❖ Magnesium sulfate
- ❖ Onion
- ❖ Potassium chloride
- ❖ Sodium chloride
- ❖ Calcium chloride
- ❖ Fuller's earth
- ❖ Papain
- ❖ Urea or Tannic acid
- ❖ Povidone Iodine
- ❖ Sodium Sulfite
- ❖ Ice
- ❖ Carbon dioxide gas
- ❖ Sodium Bicarbonate



LRP Drugs

- ❖ Acetic acid
- ❖ ~~Calcium oxide~~
- ❖ ~~Garlic~~
- ❖ ~~Magnesium sulfate~~
- ❖ ~~Onion~~
- ❖ ~~Potassium chloride~~
- ❖ Sodium chloride
- ❖ ~~Calcium chloride~~
- ❖ Fuller's earth
- ❖ ~~Papain~~
- ❖ ~~Urea or Tannic acid~~
- ❖ Povidone Iodine
- ❖ ~~Sodium Sulfite~~
- ❖ ~~Ice~~
- ❖ Carbon dioxide gas
- ❖ ~~Sodium Bicarbonate~~



Deferred Regulatory Status (DRS) Drugs



Drug and Therapeutant Use in Aquaculture



Deferred Regulatory Status

- Very little specific, written guidance available
-verbal translation is that FDA chooses not to regulate....period!..... at this time
- For all practical purposes.....this is “carte blanche”



DRS Drugs

- ❖ **Copper sulfate (CuSO_4)**
 - For use to control mortality cause by Ich on catfish reared in earthen ponds
 - For use to control fungus on channel catfish eggs
- ❖ **Potassium permanganate (KMnO_4)**
 - For use to control mortality caused by columnaris in freshwater finfish
 - ❖ hybrid striped bass
 - ❖ Channel catfish
 - ❖ Freshwater-reared salmonids



Extra-label Drug Use Policy

- AMDUCA (signed into law in Oct. 1994) outlines provisions relating to extra-label use of approved New Animal Drug (NAD)
- Is a reflection of FDA's recognized need for veterinarians to be able to treat disease conditions for which there may not be an effective, approved drug
- Applies to the extra-label use of any approved NAD or human drug by a vet within the context of the vet-client-patient relationship in a manner not in accordance with label directions.
- **Animal Medicinal Drug User Clarification Act of 1994**



Extra-label Drug Use Policy

➤ Extra-label drug use is limited by the following very specific restrictions:

1. Applies only to NAD's already approved for use in other species
2. Available only thru practicing veterinarians, and mandates a valid veterinarian/client/patient relationship
3. No effective approved drug is available for use in target animal
4. Permits the use of approved over-the-counter drugs mixed in feeds
(veterinarian order to treat a different fish species than that described on the label or for a different disease condition)
5. Not permitted for VFD drugs!
6. Does not permit the use of drugs to prevent disease, or for enhanced production (e.g., growth promotion, induced spawning)



Investigational New Animal Drugs



Drug and Therapeutant Use in Aquaculture



Good ol' INADs

"The Upside"

- Provide access to a variety of drugs...and drug uses....that are not yet approved by FDA (and that we would otherwise not have at our disposal)
- Contribute valuable efficacy and safety data that can be used to support broadening new approvals
- Treatment objectives written to be as inclusive as possible (e.g., “.....to control mortality caused by bacterial pathogens in freshwater fish”)
-we have been able to assemble quite a few!!



Good ol' INADs

"The Downside"

- Not just “use permits” like many folks initially believed
- Paperwork (and accountability) necessary for ALL involved
- Cost to participate....in either \$\$'s and/or time
- Under constant scrutiny by FDA.....as many within the “Big FDA” would like to see them go-away



INADs

- ❖ **Aquaflor[®]** (not a VFD Drug)
 - ❖ **OTC** (feed – therapy)
 - ❖ **OTC** (injection – therapy)
 - ❖ **OTC** (immersion – therapy)
 - ❖ **OTC** (feed – marking)
 - ❖ **Erythromycin** (feed – therapy)

 - ❖ **SE-MARK[®]** (Calcein)
 - ❖ **OTC** (feed – marking)

 - ❖ **17 alpha-MT**

 - ❖ **Slice**
- ❖ **Formalin**
 - ❖ **Hydrogen peroxide**
 - ❖ **Chloramine-T**
 - ❖ **Diquat**
 - ❖ **Copper Sulfate**
 - ❖ **KMnO₄**

 - ❖ **CCP**
 - ❖ **LHRHa** (injectable)
 - ❖ **sGnRH** (implant)

 - ❖ **AQUI-S**



Summary of Legal Drug Use Options



- ...thankfully...the utility of the sum is greater than that of the individual parts
-a variety of options do exist
-but we certainly have a long way to go with respect to our goal of **approved drugs**



Summary

...or “what’s this all mean??”

- ❖ Yeah, you’re right, “we” don’t have many approved aquatic animal drugs to chose from...
- ❖ However, access to INADs, LRP drugs, and DRS drugs enhances our medicine chest...
- ❖ Provide us more options to treat fish than we might have previously thought.



Regardless of the “classification” of the accessible drugs, all drugs should be used judiciously

- ❖ Treat as a last resort
- ❖ Know what you’re treating for...don’t guess
- ❖ Use the appropriate drug correctly – more is not necessarily better
- ❖ Adhere to established withdrawal periods and hatchery discharge requirements
- ❖ Establish a valid vet/patient/client relationship to gain access to VFD drugs



Questions??



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