Is Draxxin a good substitute for Gallimycin?

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Draxxin – a Team Effort

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Cowlitz Salmon Hatchery – staff
Little White Salmon Hatchery – staff
Why do we need Draxxin?

Bacterial Kidney Disease

Image credit: D. Thompson, USFWS
BKD – *Renibacterium salmoninarum*

Chronic, granulomatous inflammation

Morbidity and mortality, especially in spring Chinook
Management and control of BKD

Reservoir

Agent

Direct contact (horizontal)

Vertical transmission

Susceptible host(s)
Management and control of BKD

Prevention is KEY!!

ELISA based culling
Adult injections

Reservoir
Agent

Vertical transmission
Direct contact (horizontal)

Susceptible host(s)
Prevention of BKD...

Pathogen
- Prevent exposure
- Secure water supply

Environment
- Reduce densities
- Increase turnover
- Change temperatures
- General conditions

Host
- Diet
- Minimize stress

Disease occurs
Prevention of BKD... Disease occurs

**Pathogen**
- Prevent exposure
- Secure water supply

**Environment**
- Reduce densities
- Increase turnover
- Change temperatures
- General conditions

**Host**
- Diet
- Minimize stress
Pathogen (BKD) control – Adult Injections

Controls vertical transmission and reduces pre-spawn mortality.
Draxxin (Tulathromycin) – a good substitute?
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Draxxin (Tulathromycin) – a good substitute?

- Preliminary results (in vivo) indicated a 0.5ppm (ug/mL)
- But does this hold true in vitro??

Other studies?? (USGS, NOAA, USFWS)

Priority ➔ Pilot Pharmacokinetics study
Little White Salmon Hatchery
Cowlitz Salmon Hatchery
Draxxin pK study design

- 5mg/kg IC injections in adult, female SCS at LWS and CSH
- Sacrifice fish at various time points over a 57 day period
- Measure drug concentration in ovary, kidney, and muscle

**Objective:** Does Draxxin reach therapeutic levels after IC injection?
<table>
<thead>
<tr>
<th>Time</th>
<th>Injected Fish Sampled</th>
<th>Uninjected Fish Sampled</th>
<th>Tissues Collected For LC-MassSpec</th>
<th>Tissues Collected for Histo</th>
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<td>Muscle, Kidney, Ovary</td>
<td>Heart, Liver, Kidney, Intestine</td>
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</tbody>
</table>
Preliminary results . . . (LWS)

Concentration, ppm vs. Hours, post injection (5mg/kg) for Muscle, Kidney, and Ovary.
Preliminary results . . .

It works!!
Preliminary results . . . (LWS)

Concentration, ppm

Hours, post injection (5mg/kg)
CSH preliminary results (to 24 hours)

Concentration (ppm) over time for different tissues:
- Muscle
- Ovary
- Kid

Time, hrs post injection:

- 0
- 4
- 8
- 24
Draxxin kidney residues (ppm) averaged, 5mg/kg dose, LWS and CSH

- Kidney-L
- Kidney-C
LWS and CSH – combined

Concentration (ppm) vs. Hours post-injection for Kidney, Muscle, and Egg.
In conclusion . . .

Need the rest of the data...

Questions remain:
• How long at therapeutic levels?
• NE of carcasses → and withdrawal period?
• Does Draxxin really work??

Do we really need it???
Questions?