

AGGRESSIVE QUARANTINE PROTOCOL

compiled by Noel L. Shaw

All recently transported fish have been stressed to some degree. I really like the idea of a gentle, quiet, de-stressing, adapting period. New fish need time to adjust to all the changes in their environment, including the pH, the temperature, the "taste" and "smell", and the chemical and mineral composition of their new water environment.

While new fish are adapting, they are simultaneously observed for any signs of disease. Their immune systems have been stressed, and they need recuperation time. A clean, quiet, well-filtered tank, separate from the main pond, and large enough to comfortably house all the new fish, allows new fish to adapt, de-stress, and regain their immune function. Food should be offered sparingly after the first day of adaptation.

The word quarantine originally meant "forty days of isolation". Many koi keepers have previously accepted that if new fish do not show any sign of parasites or infections during this lengthy quarantine and adapting period, the new fish may then be introduced directly into the main pond.

HOWEVER;

We may also reasonably assume that new fish, of varying origins, having been mixed together in breeders', vendors', and auction tanks, may have been exposed to, or currently have, any and every possible pathogen and/or parasite. The purpose of this paper is to suggest a hard-core protocol that will a) ensure, as much as is possible within this era of "high risk" Japanese fish and KHV, that these new fish don't bring ANY parasites or diseases into your pond that will affect themselves or other fish, while b) minimizing the discomfort of new fish during aggressive treatment that may be vital to the health of ALL your fish.

The suggestions presented here have been gleaned from a number of sources. Some may consider it too aggressive. Ultimately, it is your call, as the fish owner, which protocol to choose: "wait and see" vs. "treat aggressively".

Suggestions: read Dr. Nick St. Erne's book "**Advanced Koi Care**", Dr. Eric Johnson's "**Koi Health and Disease**", check out www.koivet.com, and the AKCA's Koi Health Advisor info.

TREATING AGGRESSIVELY; AKA "CHEMICAL STRIPPING"

BASIC TANK SETUP

- The quarantine tank water MUST be free of chlorine, be pH buffered (consider hardened Plaster of Paris lumps to act as pH stabilizers / buffers), well circulated, well supplied with airstones, and have an established, fully cycled, functional biofilter (see "[Rapid starting](#)" biofilters, [Making a home made sponge filter](#), and other links through Dr. Eric Johnson's web site. Ammonia, nitrites, and pH should be checked daily. In addition, it is advisable to have a means of rapidly heating the entire water contents to at least 87° F, which may require the tank and filters to be insulated (or inside) in cold climates. The tank should be netted to keep fish in and predators out. Water should initially be at ambient temperatures to avoid temperature shocking new fish when introduced. Chemical dips should likewise be prepared with quality water from the Q-tank to avoid temp shocks.

- If fish are transport stressed, (from a lengthy flight or other bagged travel), they should first be immediately re-bagged in fresh, neutral buffered, dechlorinated water with pure O₂, floated in the quarantine tank for a few hours, and then introduced to the tank for 24-48 hrs before commencing further treatment.

http://koivet.com/html/articles/articles_details.php?article_id=223&name=Newest%20Articles)

- The quarantine tank should be maintained at a salt level of .3% (three parts per thousand - 2.4# per 100 gallons) and Dimilin (.3 ppm; one gram per thousand gallons, to eliminate crustacean parasites) for the duration of the quarantine. Bypass the biofilter (while maintaining circulation and oxygenation) during strong treatments that could knock out the biofilter bacteria. Restore salt and Dimilin levels with water changes.

- *During the following **STRONG** treatments, don't forget that any fish that "rolls over" or exhibits other signs of stress should immediately be removed to fresh water, either to another tank, or by a major water change. These chemical treatments can be dangerous! Monitor your fish carefully!*

FIRST WEEK -

DAY ONE – INSPECTION & SALT DIP (bacteria and salt susceptible parasites)

• INSPECT

Equalize temps before unbagging fish. Carefully inspect each fish up close for the presence of any skin lesions, macroscopic parasites, fin rot or mouth rot, fungal spots, red streaks in fins or tail, etc. Ideally, biopsy or sample any lesions to diagnose. Introduce fish, one at a time, into a separate salt dip (perhaps in a show tub). After treatment, transfer each fish to the established quarantine tank.

• SALT DIP - WATCH FISH CAREFULLY!!

- 3 (three percent) % salt dip (20 weighed ounces- about 1½ cup - per 10 gallons) for **5 minutes MAX** or until fish **begins** to lose balance or roll over, **OR**
- 2% (two percent) salt dip (13 weighed ounces- about 1 cup - per 10 gallons) for **10 minutes MAX** or until fish **begins** to lose balance or roll over, **OR**
- 1% one percent) salt dip (6.5 weighed ounces- about ½ cup - per 10 gallons) for **20 minutes MAX** or until fish **begins** to lose balance or roll over.

Fish should be moved back to the quarantine tank from the salt solution at the maximum time even if they haven't rolled over or otherwise show stress! For smaller fish, use the weaker dosages.

• **Koi do not appear to like the strong salt solution and may zip around frantically. This is OK, but move fish back to the quarantine tank as soon as they show signs of stress.**

DAY TWO - REST

DAY THREE – ANTIBIOTICS – (OPTIONAL)

• INJECT OR DIP

Inject each fish with a single prophylactic dose of Baytril, NuFlor, Azactam, etc. per established dosage rates in Dr. Nick St. Erne's book "Advanced Koi Care", or dip in Tri-Cide Neo or similar antibiotic dip per product instructions. Otherwise, diagnose and treat secondary bacterial or parasitic infections as they may occur during this entire time frame.

DAY FOUR - REST

DAY FIVE - FORMALIN DIP (for salt resistant protozoan parasites)

• FORMALIN DIP - 10X "NORMAL" STRENGTH SOLUTION

Introduce fish into a separate tank (show tub?) with a formalin DIP, then return immediately to Q-tank:

- 250 ppm solution for 5 minutes MAXIMUM in a well aerated tub / tank (formalin depletes oxygen availability) (Normal WHOLE POND dose is 25 ppm (10 ml per 100 gallons), or 50 ppm for 120 minutes, then 50% water Δ to a 25 ppm dose for 12 hrs.
- **Be extremely cautious with formalin as water temps approach 80° - oxygen content will be too low.**
- **Remove fish to fresh water at once if fish shows stress.**

DAY SIX & SEVEN - REST

WEEK TWO, THREE, & FOUR - KHV / WARMUP / INACTIVATION

• WEEK TWO – TANK WARMUP to 87-90° F

- maintain and increase aeration and oxygenation as water warms!! Reduce feeding.
- gradually (3-5° per day) warm up tank to 87°-90° F to activate and "neutralize" KHV / CNGV
http://koivet.com/html/articles/articles_details.php?article_id=197&category=17&name=Diseases
- (KHV "activates" in the seventies - if KHV infection suspected by symptoms, warm up **ASAP!** to 87°-90° F
(Typical KHV Symptoms: • Head down swimming ; • Lethargy and weakness ; • Sunken eyes ; • Gill Lesions. • Sandpaper skin • White stringy slime on the skin • Eventual dark discoloration in certain surviving fish • Body sores)

● **WEEK THREE – WEEK AT THE BEACH**

- MINIMUM 7 day stay at 87°-90° F. Feed very little.
- maintain and increase aeration and oxygenation as water warms!! Check water quality daily.

● **WEEK FOUR – COOL DOWN**

- slow (one week or more) period of cooling down to 74 - 78°. Drop no more than 3°F per day.
- watch for, diagnose, and treat bacterial or parasitic breaks as they may occur during this entire time frame

WEEK FIVE AND SIX

● **PREPARE MAIN POND**

- Now that the new fish have been “stripped” of parasites, and cured of bacterial or viral infections, we will plop them into the main pond, with fish and water that are healthily (stealthily?) carrying their own (hopefully minimal) load of parasites and bacteria. Right?
- Let’s clean up the main pond somewhat as well. Hopefully, the pond is already free of sludge, excessive debris, dead fish, etc., and the bioconverters / biofilters are reasonably fresh.
- A permanganate series will knock down the background levels of bacteria, fungals, and parasites, allowing all the fish a better chance. We will treat the main pond as well as the quarantine tank.

● **POTASSIUM PERMANGANATE TREATMENT – MAIN POND**

- bypass biofilter, maintain aeration and circulation
- dose at 1 gram per 100 gallons (1 tsp per 600 gal) (2.6 ppm) with permanganate crystals (pre-dissolved in water)
- after several hours, when pond water viewed in a white cup appears tan, NOT pink, resume filtration.
- neutralize Permanganate with standard 3% Hydrogen Peroxide, 1 cup (250 ml) per 1000 gallons
- repeat these four steps on days four, eight, and twelve
- 50% water change after last treatment (dechlorinate new water)

● **POTASSIUM PERMANGANATE TREATMENT – QUARANTINE TANK**

- maintain salt level at .3%
- maintain water temp between 74-78°
- bypass biofilter, maintain aeration and circulation
- dose at 1 gram per 100 gallons (1 tsp per 600 gal) (2.6 ppm) with permanganate crystals (pre-dissolved in water)
- after several hours, when Q-tank water viewed in a white cup appears tan, NOT pink, resume filtration.
- neutralize Permanganate with standard 3% Hydrogen Peroxide, 1 cup (250 ml) per 1000 gallons
- repeat on days four, eight, and twelve

WEEK SEVEN

● **COOL DOWN QUARANTINE TANK**

- If desired, leave fish in quarantine tank at 74-78° until natural pond warmup in spring
- If main pond temps are much cooler, drop temps in Q-tank SLOWLY (2-3°F per day) until similar to main pond

● **WATCH AND WAIT**

- diagnose and treat bacterial or parasitic breaks as they may occur during this entire time frame

● **INTRODUCE NEW FISH TO MAIN POND**

- Bag new fish, float in main pond to equalize water temps
- Consider netting or covering pond - watch for jumpers (new fish “freaking out” in new pond)

● **WATCH AND WATCH AND WATCH**

- enjoy new fish – watch for and be aware of any unusual behaviors or lesions in ALL your fish.

References and special thanks to:

AKCA (Koi Health Advisor) KHA program

Nick St. Erne, D.V.M. - [Advanced Koi Care](#)

Eric Johnson, D.V.M. - [Koi Health and Disease](#) , www.koivet.com