



The complete biosecurity solution

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Biosecurity for Koi Systems.

Koi carp are normally kept in re-circulation systems and much of the skill of keeping them in good health relates to the ability of the hobbyist to maintain the filter system and thus the water quality.

Recently two very serious virus diseases have appeared in the UK, which are capable of causing very severe losses in Koi. These are Koi Herpes Virus disease and Spring Viraemia of Carp disease. As with all virus diseases there is no specific treatment and supportive husbandry coupled with biosecurity measures to ensure that they do not spread are all that can be achieved.

As a result many Koi owners and commercial dealers have become much more aware of the need for biosecurity, as this provides the only way to safeguard their often valuable stocks.

Biosecurity for Koi keepers applies exactly the same principles as those applying to any fish producing operation but with the added complication of the filter system, which can be a haven for infectious agents and which will be damaged or die out if disinfectants are used on it.

In an effort to help reduce the incidence of the Koi virus diseases and improve the general health and welfare of Koi, Bradan with the assistance of several experienced Koi hobbyists and dealers have developed a variation of the highly successful Biosecurity programmes used in commercial salmon farms.

Unfortunately, because of the nature of the recirculation systems used, water sanitization procedures involving continuous dosing of the water with very low levels of Virkon® Aquatic, are not possible and a compromise system of regular intermittent dosing of the water which then recirculates until the virucidal components have broken down naturally has had to be used. This is not as effective as continuous usage, but is still of value in reducing viral levels.

Because of the variability inherent in Koi systems however, no responsibility can be accepted by either Bradan or the manufacturers, Dupont Animal Health Solutions, for the use of in- water sanitization in this way.



Using Virkon® Aquatic to Sanitize Koi ponds

What is Virkon® Aquatic?

Koi Herpes Virus and Carp Rhabdovirus are serious threats to Koi keepers. Many fish are carriers without showing any signs. When placed in contact with vulnerable fish, they may, especially if stressed, excrete virus into the water and this leads to infections and very high mortalities.

Virkon® Aquatic is independently proven highly effective against significant fish pathogens. In addition recent work has shown that if added to the water of fish farms on a continuous basis at 2parts per million (2ppm), Virkon® Aquatic breaks down in the water and has low environmental toxicity. This does not disinfect the water completely, like the concentrated disinfectant but sanitizes it and so reduces virus availability for infection. It also reduces levels of pathogenic bacteria and some protozoan parasites from the water column.

Studies with Koi carp in the USA have shown that the use of Virkon® Aquatic in carp water at up to 8 parts per million (ppm) on a continuous basis shows no detrimental effect on the health of the fish and Virkon® Aquatic is highly effective against Herpes and Rhabdoviruses.

Unlike farmed fish, Koi are kept in recirculation systems with biological filters. This makes continuous dosing of the incoming water impossible. Koi Herpes Virus is however potentially such a severe problem that DuPont Animal Health Solutions in conjunction with Bradan Biosecurity have developed a system which will normally still provide a degree of water sanitization for the Koi owner without rendering filters ineffective or causing Virkon® Aquatic concentration to rise to toxic levels.

Virkon® Aquatic is primarily a powerful complex formulated virucidal disinfectant for disinfecting aquatic equipment. It has now been used effectively, for in-water sanitization against Koi Herpes Virus and Carp Rhabdovirus, at up to 8ppm, in many Koi systems in Europe and USA. Because all Koi filter and pond systems and water chemistries are different, however, this leaflet can only be issued on an advisory basis.

Sanitizing Koi Pond Water with Virkon® Aquatic

Most Koi tanks and ponds are fitted with a recirculation pump, microbiological filter and a UV light source. As the sanitizing 'Virkon® Aquatic' is deactivated by UV it is essential that the UV source is fitted just before the point of disinfectant addition.

Routine Use

Provided there is no evidence of any illness in the fish, for normal sanitization, Virkon® Aquatic should be added at the rate of 5 grams per 5000 litres of water. (One tablet per 1000gallons of water). NEVER add the tablets direct to the pond. Add the required number of Virkon® Aquatic tablets to 10 litres of fresh water and allow the effervescent tablets to fully dissolve.

Once fully dissolved, add the water into a skimmer or settlement tank so that it can be gradually added to the pond water as it is filtered. A dosing system is easily made from a plastic bucket with a small hole in it to release the Virkon® Aquatic slowly.

Ensure the recirculating pump is running to aid dispersion of the disinfectant.

Dose once per week. Dosing can be increased to twice per week during the main KHV risk periods in spring and autumn. At the point of weekly redosing it is important that 5-10% of the water volume be discarded and replaced with fresh dechlorinated water e.g. for a 1000 litre tank remove 50-100 litres. Virkon® Aquatic contains a small amount of a lipophilic surfactant, specifically active against the external envelope of viruses such as Koi Herpes Virus and this can build up over time to produce foams if such water changes are not made

New Introductions

All new fish should be held in isolation in a freshly washed and disinfected tank and filter system prior to introduction to the main pond. (The empty tank and pipework should have been sprayed and pumped through with Biosolve® Plus detergent, a specially formulated Virkon® Aquatic compatible detergent, left for 30 minutes, rinsed with chlorinated water, sprayed with Virkon Aquatic® at the **disinfectant rate of one tablet in one litre of water**, left for a further 30 minutes and rinsed again with chlorinated water).

In the isolation tank, water should be treated with Virkon® Aquatic at two tablets per 1000 gallons every three days. Fish should be closely observed while in the isolation tank for up to three weeks and fish only transferred to the main stock when the owner is satisfied they are in good health. The isolation tank water should then be emptied and the tank disinfected again

Suspected Disease Conditions

Where there is a suspicion of Koi Herpes Virus infection or Spring Viraemia Virus* infection, among a population of Koi carp, **obviously affected fish should be immediately removed**, killed, placed in Virkon® Aquatic solution at one tablet per litre and disposed of. A specialist veterinarian should be consulted at this stage.

The water of the remaining healthy fish should be immediately sanitized at a level of 4 tablets per 1000gallons (one tablet per 1250 litres) and this should be repeated daily for at least a week. At this sanitization level it is essential that at least 10% of the water is renewed weekly.

Great care is necessary not to stress the fish in any way. If these fish appear to remain healthy then water sanitization can be reduced both in level and frequency. Any obviously sick fish should however be removed as above. **REMEMBER Virkon® Aquatic does not treat fish. It sanitizes the water in order to reduce the infectious virus levels in the water. There is NO Point in trying to bath treat fish with Virkon® Aquatic.**

Effects on Filters

Virkon® Aquatic, by its nature, is bactericidal and will have some effect on Koi filters. However, provided at routine maintenance each week, 5-10% of pond water is replaced before redosing, this should not materially affect filter effectiveness. If using at higher doses or more frequently, slight foaming may develop. This is not dangerous and the lipophilic surfactant which causes it is essential as part of the anti viral activity. If foaming does occur a lower dose may be applied accompanied by increased water changes until the water ceases to foam.

Because of the variation in filter systems that exists and the variation in water chemistry, no responsibility can be accepted for any effect on fish or filter system.

Koi users have found that a good indicator of Virkon® Aquatic being used at the appropriate level is that the water in the pond takes on a clean and slightly crystalline appearance. This can be a useful guide but this effect will not necessarily occur with all water and pond chemistries. Unfortunately, at the very low concentrations of Virkon® Aquatic recommended, it has not proved possible to devise an accurate test kit for measurement of levels in water, but work on this is continuing.

WARNING. Although there is now wide experience of safe usage of Virkon® Aquatic tablets in Koi systems by many hobbyists, because of the great range of water and system variations that are used for Koi, this note is issued on an advisory basis only.

No responsibility can be taken for any possible loss associated with the use of 'Virkon Aquatic' as an in-water sanitizer.

Please note Spring Viraemia of Carp is a notifiable disease and you must, by law, report it to your veterinary surgeon or appropriate authority if you suspect this disease.