

VERY INFORMATIVE KHV CONVERSATION. Posted on FB by Sandy Campbell

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I Have been given permission to share this information on KHV by Doctor Paula Reynolds (Lincolnshire fish health laboratories) It will also be on her website. Feel free to copy or share but do not change the text in any way.

KOI HERPESVIRUS (KHV) JANUARY 2019

The situation

In the current situation with several Japanese farms confirmed to have Koi Herpesvirus (KHV) rumours in circulation are creating questions regarding the future of Koi keeping. I am in touch with several organisations in Japan and have passed on sympathy from the dealers and hobbyists in the UK for their situation. The scale of the undertaking in preventing the spread of KHV is huge due to the numerous farms in Japan. KHV cross-infection could have resulted from practices on the farms, as it is difficult for farmers who learned their breeding skills from previous generations to realise diseases such as KHV now require them to adopt greater biosecurity precautions and I am assured standards will be raised. It is the trade and hobby in the UK that is my concern and the Koi season is nearly underway. The precautions by dealers and hobbyists must be in place now as it is a fact that Koi carrying KHV have been imported into this country. The sad truth is that whilst carriers arrived in recent shipments far more are already in the UK and have been here for far longer than is realised by hobbyists.

Koi keeper's questions

a. Hobbyists have asked why several farms are infected in Japan. REPLY: KHV can be passed on by staff as well as birds and other animals that can contact the water if farms are in close proximity. Brood stock are frequently shared by breeders, and as many farms do not produce every Koi variety fish are often exchanged between farms. These practices are common in Japan and whilst the old ways of working on the farms has bred beautiful Koi for years such methods will have to be rethought.

b. Yet another question is why UK dealers suffer a major financial loss due to KHV. REPLY: Hobbyists feel more could be done to stop Koi carrying KHV being shipped to the UK and I agree this is unfair and the freight charges still have to be paid on all shipments irrespective of the condition of the fish. It is a legal requirement that Animals for human consumption are slaughtered in an outbreak of Foot and Mouth disease and compensation is paid. However, ornamental fish are not eligible despite KHV being a notifiable disease. UK dealers have to put

money aside for such an eventuality and further cases of KHV could see some dealers unable to survive the loss.

c. I have received calls from Koi keepers regarding websites insisting that raising the water temperature to 30C cures KHV. REPLY: This claim is misleading whilst the virus will stop replicating at that temperature and the condition of the Koi may improve, this is not actually curing the disease. When the heating equipment is switched off or it fails, and the water cools the Koi are again at risk. The fish are likely to become ill again within a few days if the virus was in its early stages before the temperature was raised. Koi that contract KHV and survive will carry the disease, as 30C does not eradicate it as is suggested on certain websites. Anyone who wants to use heat in this way should take expert advice, as the Internet is not a reliable source.

d. Why antibiotics are never used during KHV outbreaks is another popular question. REPLY: Antibiotics cannot cure a virus and would never be used during KHV unless a secondary bacterial infection is diagnosed that could lower the chance of survival. Most skin lesions are likely to be due to KHV rather than bacterial infection and the effect of some antibiotics can be counter-productive as can netting or moving the fish when they are fighting KHV. An antiviral product in the water is recommended it will not cure the disease although it may help to lower the viral level in the water.

e. It has concerned a few hobbyists why vaccination is not a control measure in Japan. REPLY: I can only comment briefly, as this is a multi-layered subject. Vaccines vary in how they work, and some have to be challenged to ensure the fish are protected. Depending on how this procedure is carried out there can be a risk when integrating some vaccinated Koi with those from other sources. Before any vaccination is considered international legislation would have to be satisfied as Koi are eaten in several countries and there would have to be a definitive way of preventing vaccinated fish getting into the food supply chain. Fish are food as well as pets and human health must be the prime consideration. The success of a vaccination program in a country with so many Koi farms such as Japan is limited given its huge scale. To be of real benefit a vaccination program needs to be carried out in all Koi farms worldwide using an identical method and that is currently impossible.

f. I have been asked why I regard private sales between Koi keepers as a risk in the spread of serious diseases. REPLY: When a Koi pond is first filled with fish, the tendency is to stock Koi from any source. It is when Koi keepers become discerning in their choice of Koi they sell or give away their original Koi to others and visit Koi specialist dealers, and often more than one. If we factor in gifts of fish with unknown origins, club auctions, and nameless Internet traders there can be numerous sources for the fish in any pond. This situation increases the possibility of disease. KHV is only one serious disease Koi can contract there are others and it is safest to buy all Koi from one trusted dealer.

g. Why quarantine fish at all? is a question I am often asked. REPLY: I am aware of dealers and hobbyists who dislike the concept of quarantine let alone heat ramping and do not see why as a scientist I support both practices. A period of isolation for all newly imported Koi allows them to go through general adaptation syndrome which is a natural process triggered in Koi when they are uprooted and transported. Even when Koi are known to be KHV free, they should still be quarantined, as there are other diseases the stress of transit can trigger. When I hear the comment that Koi dislike heat ramping, I am forced to reply they do not enjoy KHV either and chilling and heating does not subject Koi to temperatures outside their experience in the UK climate. Having studied the biology of KHV, its complexity, and the various strains that now exist in my opinion heat ramping during quarantine is worthwhile and helps prevent the spread of all disease. See Paula's conclusion below.

h. I have been asked to summarise the purpose and practicality of tests in respect of KHV. REPLY: The test for live active KHV is a polymerase chain reaction or PCR test for fish suspected of suffering from KHV. The disease is notifiable in the UK and an outbreak must be reported to CEFAS an arm of Defra. CEFAS are the fish police and their role are to keep serious diseases out of UK waters. A PCR is not the only test, it is possible to test for exposure to KHV, or for the carrier state and these are not identical conditions. Testing methods vary and there is limited availability for these tests. Anyone who has a healthy Koi from a source known to have KHV could decide such tests are helpful. However, testing one fish from any pond or tank means the health of that fish is confirmed although this leaves rest of the fish with an unknown health status. Single tests will not provide reassurance in every situation. Anyone unsure about tests is welcome to call LFH.

i. A hobbyist that suspects his Koi losses were due to KHV asked what his legal position was as all his Koi were from one dealer. The hobbyist wanted a payment in compensation although his dealer was willing to replace his fish with better quality Koi as a goodwill gesture. REPLY: Although I am not a lawyer, I have been an expert witness in many cases. It is the dealer's responsibility to ensure that the Koi he sells are healthy, there is no difference between buying a television, or a fish they must both be "fit for purpose". However, if a dealer proves he has taken every precaution to prevent the sale of fish carrying any disease the law does not necessarily favour a customer's claim over a dealer's situation. A case is flawed when tests have not confirmed KHV in the pond or the trade premises as White spot could be to blame without an examination, and this is unfair to the dealer. If a test for KHV had been positive, a hobbyist could be asked for proof the dealer concerned is the only source for every Koi in his pond. If a dealer admits liability, compensation is due by a payment or replacement Koi. If there are KHV survivors in a pond, then new Koi cannot be introduced and the dealer will compensate with a payment or goods. This is a rare situation for any hobbyist or dealer and every case is unique. However,

without an examination of the fish, a resolution is not always possible, and facts are needed in to ensure fair play to both parties.

j. The temperatures required during heat ramping has been another popular question. REPLY: At the outset of the chill heat cycle, the water temperature should be held under 15C for 24 hours. This can be difficult without a chilling device at certain times of year and 12C is ideal if it can be achieved. After 24 hours, gradually increase the temperature at 1 degree per day over 5 days to a minimum of 23C and a maximum of 27C and hold this for 3 weeks. The temperature should then be taken back down slowly under 15C to 12C if possible for another 24 hours and then taken back up to a maximum of 27C and held for another 2 weeks. If the fish remain healthy, it is possible that the Koi have never been exposed to a serious disease such as KHV. However, signs may not materialise after 1 heat ramp cycle, and 2 or more is better. In some bio secure trade premises, 3 or 4 chill - heat cycles are carried out and there are UK dealers who quarantine seriously for months carrying out several chill heat cycles. Dealers are advised at the outset of heat ramping to keep the Koi from each farm in a shipment in a separate tank and to introduce naive English bred Koi to every tank. Later after 2 cycles are completed, a few Koi from each tank representing all the farms in the shipment can be mixed and heat ramped together with the naive fish. It is important to monitor the fish for White spot as it is triggered by temperatures changes. The various periods for holding fish at certain temperatures vary with the actual purpose of each quarantine protocol, the above periods are adopted to minimise stress. Most hobbyists find this process difficult without facilities - this brief summary may help those who can quarantine at home.

k. Hobbyists tell me they are unsure which dealers are genuinely bio secure and wonder if a list is possible REPLY: At present, there is no way of confirming a dealer's biosecurity status now the PKDA is closed. I can assure Koi keepers the trade is looking at this issue. If a dealer makes claims about quarantine methods that cannot be substantiated, it is safer to buy elsewhere or consider home quarantine. Those dealers who follow the protocol I wrote for the PKDA or the LFH protocol have proven that heat ramping in quarantine has worked for them. It has protected their customers as the disease outbreak occurred in their quarantine facilities and to me this justifies the cost and additional work involved. We have to admire dealers who have been open about having KHV and those who euthanised healthy Koi as an additional precaution. In some cases, these were fish in earlier shipments from farms only recently confirmed to have KHV or held in tanks close to infected fish. Whilst splashing should never be an issue with full biosecurity in place some dealers would have sleepless nights unless they took every possible precaution. It costs money to euthanase expensive Koi to protect customer's and I am sure hobbyists will support dealers in this situation when it comes all the items Koi need. At the other extreme in the industry are aquatic outlets who sell Koi the same day they arrive in the UK without realising the risk they are taking. I appreciate not all dealers can heat

ramp due to the space, equipment, and costs involved. However, until better control measures are in place, I can only recommend hobbyists buy Koi from a dealer known to be carrying out a period of quarantine that includes heat ramping, or to quarantine at home.

Paula's conclusion

My views on quarantine and heat ramping are based on many years of experience in fish disease research. I have never suggested that heat ramping provides a guarantee of KHV free Koi, however, I have found the more chill – heat cycles healthy Koi are subjected to, the less likely they are to test positive for either exposure to KHV or for the carrier state. Nevertheless I am also a Koi keeper with hundreds of fish to care for and I could also put forward a valid argument that the deliberate use of temperature changes to induce disease in healthy Koi is a far from ideal method to limit the spread of disease and like most Koi keepers I wish there was a simpler procedure .However, in the current situation it is better than doing nothing to protect much loved pet Koi and the future of the Koi keeping hobby .

Dr Paula Reynolds