

**THIS MONTH IN THE KOI POND** —Jerry Kyle

Spring has sprung and the water is finally approaching 70°F here in the California Central Valley. As temperature advances out of those dreaded 60s, I start relaxing a little as I know something called the Koi Natural Immune System will finally become effective enough to do what it is supposed to do. This has not been a bad winter for me but I did have two koi that somehow managed to hang on to a little secondary bacterial infection through the winter. Some call it fin rot. It was a continuation from a case that popped up early last fall and was cleared from most of the pond. When a problem arises at summer's end and water temperatures fall and take the natural immune system with it, there often is not complete healing. Things may not get worse but, they may not get better either and need watching. It does not get real cold in our area and we often find a sort of winter "stalemate" between the bacteria and the immune system. Slight redness on a fin edge appears to just hang on. In warm water a little iodine or antibiotic ointment topically applied may usually be all it takes to swing the balance of power to favor the immune system. With cold restricting the system a minor scrape with bacterial infection can just hang on.

Last month one of my 24" girls was found floating listlessly near the surface. Closer observation found "hole in the head," where she had developed, unseen by me, a large deep opening completely through her gill cover. Being Utsuri, the black and white pattern camouflaged the wound and it had not been recognizable. A little sedation let me closely examine the hole. I applied iodine and, using a finger, applied antibiotic ointment only to be startled when my finger penetrated completely through into the gill area. A big finger equals a big hole. Three days later I was sure this girl was going to die but in those three days I raised the water temp to 76°F and, yes, salted at 0.3% and added some KoiZyme. That 76°F gets the immune system cranked up to maximum where it rules. This is not rocket science and more and more Koi keepers are now getting quarantine tanks and learning if they rig up a simple inexpensive plastic cover, like a hot house has, over the tank they can get the water temp up and maintained with half the electricity usage. The girl and a friend for companionship are eating, frisky, and appear to be doing well. Without the heated quarantine it may have been different. Quarantine tanks rule.

The main pond was salted as I am prone to do coming out of winter and KoiZyme was also added as a precaution. KoiZyme is not a medication but a natural "good bacteria" that competes with the bad bacteria for its food source. Bacteria find an opening (wound) and feed on the dead cells found there. They then excrete their waste product which comes in contact with surrounding healthy cells. This produced waste toxin kills the adjoining healthy cells on contact providing more dead material for more bad bacteria to feed and multiply. This cycle continues, infecting an increasingly larger area. The pathogenic (bad) bacteria only consume dead, not healthy, cells and the KoiZyme bacteria get in there, shoulder to shoulder so to speak, and also consume dead cells. The difference is these "good" bacteria do not excrete a toxic substance to cause more cell death and damage. As they out-consume the dead food source of the toxic bacteria those bad guys starve to death. There are now no signs of bacterial infection anywhere.

In another week I will let the ongoing water changes eliminate the salt but will continue to add only about a 1/3 cup of the KoiZyme weekly until the bottle is empty. It doesn't take much and without bacterial infection to deal with the immune system can deal with whatever else is after us.