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STRESS EFFECTS ON KOI HEALTH

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Increased stress reduces a fish's ability to ward off disease and heal itself. Some reasons for stress are handling stress, bad water conditions, inadequate nutrition, sudden changes in weather and introduction of a new pathogen to the pond or group of fish. Koi that are improperly handled maybe injured and this will allow pathogens a direct route to infect the fish. Using a proper, approved anesthetic like **Tricaine S (MS222)** or **Aquacalm** will help in reducing stress and preventing injuries.



Sudden changes in weather which causes either a decrease or increase in water temperature again creates an environment where the koi are stressed and subsequently more likely to fall sick. Introduction of new fish to a pond should be undertaken with care so that new and potentially deadly pathogens are not introduced into a naïve population. A period of quarantine is the best before introducing any new fish in an established pond.



When a koi is stressed, their immune system is compromised. Once this occurs, parasites like skin flukes, gill flukes, anchor worms will start to proliferate and attack the fish. Bacteria and fungus will begin to infect the weak koi that has been bitten by so many parasites. If the fish is strong enough, then it might be able to fight off the infection, but seeing as it could not handle the parasite infection, this is unlikely. There are many ways to treat a koi that has a parasite problem.



For mild cases and for maintenance, salt is very safe and useful to control parasites. For external parasites like anchor worms, **dimilin** (diflubenzuron) is a useful medicine. **Dimilin** is a chitinase inhibitor which effectively stops anchor worms from forming a new exo-skeleton and thus being unable to grow, the anchor worm will soon die and drop off. For internal worms, **Praziquantel** is an effective dewormer and is commonly used in the ornamental fish industry. **Metronidazole** is commonly used to treat diseases caused by flagellates.



Two new products that are available for the koi industry is **Remedor Aquatic** and **Pond Protect**. **Remedor Aquatic** is a disinfectant that can be added to the water with the fish to effectively reduce the number of bacteria, viruses and fungi in the water. Once the pathogen load in the water has been reduced, there is less chance of the fish being overwhelmed by the pathogens and succumbing to a fatal disease for example Koi Herpes Virus (KHV). It even allows naïve fish, time to deal with a new pathogen and to successfully control a disease before it gets out of hand. Studies have been done on the effectiveness of **Remedor Aquatic** on controlling disease and pathogens. **Remedor Aquatic** is not known to affect the biofilter.



Pond Protect's unique patented consortium of two nitrifying bacteria work together to reduce not just ammonia but also nitrite levels in the pond water and show action within 3 days. **PondProtect** is recommended to be used as a preventive treatment and added to the pond every week. If your pond has a biofilter, add Pond Protect to it to establish or build the nitrifying bacteria count in the biofilter in order to maintain its effectiveness. It can also be used at higher dosage levels during emergency conditions. Ammonia & nitrite are the inorganic killers in the pond and stress caused due to toxic ammonia and nitrite levels will result in devastating losses of your koi.