



PRODUCT DATA SHEET

Chelated Copper

Parasitic Disease Preventative

PRODUCT DESCRIPTION:

Chelated Copper is a precisely formulated copper solution for the prevention and treatment of the two most serious marine protozoan parasites, *Oodinium ocellatum* and *Cryptocaryon irritans*. These protozoans are commonly found on newly acquired fishes. If not controlled, they can cause extensive mortalities. The use of copper ion for the control of these protozoans has been well established, and is still considered the drug of choice for treatment. Chelated Copper, when used as directed at a concentration of 0.25 ppm, is safe and effective in the control of these dangerous parasites.

A chelating agent is a compound which strongly binds metal ions (i.e. copper) and forms a stable complex under specified conditions. The process of "chelation" confers upon the chemical complex some important chemical properties.

ADVANTAGES

The advantages of using Kordon's Chelated Copper are: (1) The formulation resists precipitation and adsorption by coral, aquarium substrates, and activated carbon. There is an extremely slow removal of the compound from the aquarium system. (2) Traditional usage with copper-citric acid solutions necessitates the need for frequent additions of solution. The free ion in such solutions, when added to seawater, is quickly removed. When using Kordon's Chelated Copper, the aquarist need not make such frequent additions to an aquatic system, since it is stable within the pH range of 2.0-8.5. (3) Chelation renders the metal ion less toxic. The formulation can be used at higher dosages with marine fishes with less fear of toxicity. Kordon's Chelated Copper is an essential medication for all marine aquarists, and should be available at all times for the treatment of marine fishes.

GENERAL DIAGNOSIS OF PARASITIC DISEASES OF FISHES

The following brief summary of clinical signs often associated with the parasitic protozoans discussed above is intended only as an aid for the beginning aquarist. It is not to be thought of as a definitive diagnostic key. It is also important that the aquarist consult appropriate, accurate references for more specific information regarding disease problems of marine fishes. In addition, if possible, skin and/or gill smears should be made and examined by a qualified fish diagnostician. Microscopic examination is recommended and is always essential for confirmation of a particular disease. In the clinical signs indicated below, a particular description may be followed by a specific disease causing organism in brackets. This indicates that there is a high probability that the cause of the disease you observed on the fish is the organism indicated in the brackets. It should be qualified that different clinical signs can be seen during the disease process and that these can occur as the result of more than one disease causing organism.

Clinical Signs:

Increased respiration; hemorrhagic body lesions; loss of normal body coloration; scratching on objects or tank bottom; white opaque to grayish papules on skin, gills and eyes of the host [*Cryptocaryon*]; randomly distributed powdery or dust-like spots on body, having a yellowish cast [*Oodinium*].

SPECIFICATIONS

Contains 0.192% copper from reagent grade copper sulfate, formulated with a powerful, nontoxic, food grade chelating agent.

Dosage: Add 1 teaspoon (approximately 5 ml) per 10 gallons of water. This produces a concentration of 0.25 ppm. When treating at the recommended dose, 4 ounces will treat 240 gallons of water.

MODE OF ACTION

Although the exact mechanism is not understood biochemically, it is believed that copper ion interferes with the activity of certain enzymes by disrupting the structure of disulfide bonds in the parasites' cells, causing irreversible damage to the proteins.



STABILITY

Chelated Copper is stable indefinitely. Keep tightly closed when not in use to prevent evaporation and increased concentration of the solution.

COMPATIBILITIES

Kordon's Chelated Copper is compatible with Trichlorfon and Methylene Blue. This product should not be combined with any other drug. NovAqua® and PolyAqua® will remove free unchelated copper ions from solution.

CONTRAINDICATIONS

This medication is not indicated for the treatment of fungal, bacterial, or viral infections of marine or freshwater fishes. The use of Kordon's Chelated Copper is primarily recommended for the prevention and control of Oodinium ocellatum and Cryptocaryon irritans.

TOXICITY

When used as directed, Kordon's Chelated Copper is nontoxic for use in marine aquaria. Except for the time required for treatment, extended continuous exposure of fishes to higher concentrations of copper (above 0.25 ppm) is not recommended. Marine fishes ingest large quantities of water, so constant exposure to excessive copper concentrations in the water could be detrimental to their health. Suggestions have been made that such long time exposures could induce pathological damage to the internal organs.

Certain species of butterflyfishes and clownfishes may demonstrate a sensitivity to higher concentrations, which in the early stages can be reflected by a lack of appetite or complete cessation in feeding. In such cases, the copper concentration should be reduced, or the fish moved to another aquarium for individual treatment at a lower concentration.

SUGGESTED TREATMENT PROCEDURES

The following procedures are suggested for marine fishes. A copper test kit is necessary to monitor copper in the water in order to assure the proper therapeutic dosage for the successful control of the parasites. In addition, the treatment period must continue for not less than 10 days. The life cycles of the parasites vary with environmental conditions, especially temperature and salinity, hence the requirement for the specific treatment period. Aquariums treated for less than 10 days may experience a reinfection. All newly acquired marine fishes should be treated as indicated in a separate quarantine tank before introduction to an established aquarium.

Prevention or treatment of Oodinium ocellatum and/or Cryptocaryon irritans:

- (a) Transfer all invertebrates to another holding tank.
- (b) Calculate the actual volume of water to be treated, taking into consideration the displacement of water by gravel, rock, coral, etc.
- (c) Add 1 teaspoon of Chelated Copper solution per 10 gallons of water. This produces a concentration of 0.25 ppm.
- (d) Add subsequent doses only as necessary to bring the concentration up to the initial concentration. A test kit is required to monitor the copper level. For example, if after performing a subsequent copper test, a result of 0.125 ppm is obtained, in the tank for which the volume is 10 gallons, you would add 1/2 teaspoon of Kordon's Chelated Copper solution. This addition would bring the concentration level back to 0.25 ppm.
Note: The minimum copper ion concentration recommended for treatment is 0.25 ppm. In some parasitic infestations, it may be necessary to increase the copper concentration beyond the minimum dosage. Further additions should be made in increments of 0.25 ppm. For example, if an aquarium is treated with the minimum dosage of 0.25 ppm, and within 24 hours an improvement in the fishes condition is not observed, additional copper solution should be added to increase the concentration to 0.50 ppm. Chelated Copper may be used up to 2.0 ppm maximum, if required. However, caution should be exercised (see Toxicity) when using concentrations higher than 0.25 ppm.
- (e) At the conclusion of the treatment period, make a partial water change of up to 50% in order to remove any excess copper. Additional changes may be necessary. Add NovAqua®. Continue to monitor the copper level. Invertebrates should not be returned to the tank until the copper concentration is below a level that is toxic to invertebrates.



NOVALEK, INC.

2242 Davis Court, Hayward, CA
94545-1114, U.S.A.
Tel. (510) 782-4058, Fax (510) 784-0945
Toll-Free: (800) 877-7387

CAUTIONS

Copper is highly toxic to invertebrates. If treatment is carried out in an established aquarium, all invertebrates must be transferred to a separate facility.