



Introduction:

The Mardel® product line of medications offers a wide range of treatments for many of the diseases that affect aquarium fish. This booklet outlines some of the common diseases and suggests which treatment would be most appropriate. Many of the treatments can be used concurrently and all Mardel® treatments have been tested for safety.

Special Notes on Diagnosis

Diagnosis of bacterial infections and parasitic infestations in salt and freshwater fish is very difficult even for the most advanced aquarist. While no drug is 100% effective, the aquarist should not hesitate to try the other Mardel® products as shown on the **Fish Disease Chart** if the product you are using does not give the results you desire.

What appears to be the same disease on different fish, or on the same fish on two different days, may not be the same affliction. Antibiotics can be effective against one and not the other. Try the complementary Mardel® products when results are not satisfactory with just one medication. Remember, even parasite infestations are sometimes mistaken for bacterial infections. For that reason, concurrent use of **Coppersafe®** is recommended. Whenever treating for parasites, always use one of the Mardel® antibiotics to prevent secondary infection.

Effects on Biological Filtration

Nitrobacter and Nitrosomonas are widely recognized as the primary beneficial bacteria present in the biological filtration system of every aquarium. Some drugs which treat fish diseases and parasitic infestations are harmful to these “good” bacteria. When the biological filter is upset, there is a build-up of ammonia and nitrite concentrations resulting in fish distress and sometimes death. Mardel products have been tested with known strains of these bacteria with no adverse effects noted. When used as directed they do not interfere with the biological filter.

Note: In heavily stocked tanks it is important to actively monitor ammonia and nitrite levels because during treatment fish may excrete more waste materials. After treatment it is always beneficial to add a boost to the biological filter with the use of a bacterial culture treatment like **Bacterstart®**.

Precautions

When treating with Mardel® medications, it is not necessary to adjust pH, temperature or to make water changes if readings are in the ideal range. Maintain normal filtration and air. If an activated carbon filter is more than 6 days old, it may be left in place. However, fresh activated carbon and certain chemical sponges may reduce the activity of medications and should be removed. **Be sure to treat for the full duration recommended**, even if symptoms disappear after a few days. Any sudden change in aquarium conditions can be hazardous. Make changes gradually. Do not overdose. All treatments should be dropped into the tank, **not** in the filter. Tablets will dissolve gradually over time. **Use of a hospital tank is recommended. Keep all medications out of the reach of children.**

All Mardel® medications are for the exclusive use with ornamental fish and/or other ornamental organisms and are not intended for use with fish for human consumption or use by humans.

Bacterial Diseases

Mardel® Medications to Treat Bacterial Disease

Maracyn® Powder (Freshwater and Saltwater)

For infections of: *Columnaris* – “Body Fungus” (white-grayish material covering most of the body), *Fin and Tail Rot*, *Popeye*, *Gill Disease*, and *secondary infections*.

Maracyn® is a specially compounded broad-spectrum antibiotic (erythromycin) which has been shown to be effective against a number of pathogenic bacteria associated with ornamental fish disease. It was developed for complete but gradual dissolution in water. It is primarily effective against gram-positive pathogenic organisms. Symptoms of clamped fins, swollen eyes, heavy or rapid breathing, patchy coloration, change in swimming behavior or corner hiding can be signs of possible bacterial infection. All suspected bacterial infections should be treated immediately.

Maracyn® is non-toxic to invertebrates.

Follow dosage directions as detailed on the product packaging.

Maracyn® Two (Freshwater and Saltwater Powders)

For infections of: *Fin and Tail Rot*, *Popeye*, *Gill Disease*, *Dropsy* (swollen body, protruding scales), *Septicemia* (bleeding or red streaks on body), *secondary and internal infections*.

Maracyn® Two powder is a broad-spectrum antibiotic (minocycline) developed for use in aquariums. Due to its unique properties, it is absorbed by the fish through the skin. During the prescribed treatment, the concentration of **minocycline** in the fish fluids rises to a therapeutic level and is available to fight systemic infections susceptible to its action. It is primarily effective against gram-negative pathogenic organisms. Internal diseases are more difficult to detect than external ones and early detection is almost impossible. Symptoms of clamped fins, general listlessness, not eating or other unusual behavior can be caused by internal infections. All suspected bacterial infections should be treated immediately.

Maracyn® Two is non-toxic to invertebrates. Cloudiness may occur while using **Maracyn® Two**. Once the full course of treatment is completed, a 25% water change is recommended. This, along with the addition of fresh activated carbon, clears any remaining cloudiness.

Follow dosage directions as detailed on the product packaging.

Maracyn® Plus (Freshwater/Saltwater) solution

For infections of: *Fin and Tail Rot*, *Popeye*, *Mouth fungus*, *Dropsy* (swollen body, protruding scales) and *ulcers*.

Maracyn® Plus contains two powerful antibiotics, Trimethoprin and Sulfonamide. **Biospheres®** products make use of a revolutionary technology that delivers the antibiotic directly to the fish. Multi-layered microspheres attach to the fish and break down one layer at a time releasing the antibiotics in a controlled regulated manner. A filming agent, Chitosan, which has a molecular structure similar to the natural mucous coat of a fish, seals the treatment in contact with the tissue surface.

Maracyn® Plus is non-toxic to invertebrates. A slight reduction in biological activity will result from the use of **Maracyn® Plus**. After treatment, carry out a partial water change and add **Bacterstart®** bacteria culture to boost the biological filter. Normal biological activity will resume after **Maracyn® Plus** has been removed from the water. Partial water changes and fresh carbon in the filter are all suitable methods to remove **Maracyn® Plus** from the water.

Special note on Maracyn® Plus – **Maracyn® Plus should not be used** in conjunction with any other antibiotic treatments. Complete the full treatment and carry out a partial water change before using another antibiotic. Because of the unique action of the microspheres contained in **BioSpheres®** liquid products, care should be used when combining **Maracyn® Plus** with medications from other sources.

Follow dosage directions as detailed on the product packaging.

Bactershield™ Freshwater/Saltwater solution is a revolutionary new way to help maintain fish in optimum health. Natural oils and extracts are combined with **Bioshield™** (a film forming matrix) to help repair and strengthen a fish's natural slime coat and help provide a protective shield around your fish. A fish's slime coat acts as the first line of defense for fish against bacterial and fungal infections.

Special note on Bactershield® — Do not exceed recommended dosage. This product may slow biological filtration. During use some sessile invertebrates will retract for the first several hours. This condition will be temporary and may last for up to 24 hours. Tested on Stone Polyp, Brain Favites, Mushroom (Rhodactis), Ricordea Sp., Favia Fragum, Plate Coral Sp., Tubastraea Sp., Knobby Leather Sp., Acropora Sp., Finger Coral (Porites) coral species. All corals and polyps may not react the same way as the test species.

Follow dosage directions as detailed on the product packaging.

Parasitic Infestations

Mardel® Medications to Treat Parasitic Infestations

Coppersafe® (Freshwater/Saltwater) solution

For infections of: *Ich*, *Flukes* (Cyrodactylus), *Anchor worms*, *Velvet/Protozoan diseases* and *other external parasites*.

Ichthyophthirius (*Ich*) – White spot disease is caused by a parasite that attacks all freshwater and saltwater fish species. The fish appears to be covered by numerous white spots. The parasite is easily transmitted from one fish to another. Ich can only be controlled in the free-swimming stage of the parasite. Five to 30 days may be needed before the infestation is completely eradicated.

Chilodinella – An external parasite causing the fish to secrete excess mucous, resulting in the appearance of a bluish-white film on the body of the fish. In severe conditions, the skin peels off, gills are damaged and the fish dies. Gills are usually attacked first and symptoms of oxygen starvation are noted

Trichodina – An external parasite most commonly found in freshwater fish, causing cloudiness on the skin and red areas where hemorrhages have occurred due to the teeth of the parasite.

Gyrodactylus – Affects the skin of fish. Colors fade, fins droop, fold and gradually become torn. Fish become sluggish and weak.

Velvet/Gold dust disease – Affects the skin and gills of the fish. Fish suffering from this disease may look as though they have been sprinkled with gold dust. It can be successfully treated in the free-swimming stage of the parasite.

Coppersafe® solution remains active for over one month in the aquarium. It is a safe, stable, non-staining concentrate that does not color aquarium water. Be sure to add **Coppersafe®** solution to replacement water when water changes are made. This will maintain the therapeutic level of **Coppersafe®** solution.

Because **Coppersafe®** solution is so stable in water, partial water changes are the quickest way to remove it from the water.

Special notes on Coppersafe solution – Copper levels are commonly measured as free or as total copper. The unique formulation of **Coppersafe®** solution maintains a total copper level of 1.5 ppm to 2.0 ppm when used as directed. Copper test kits that measure Chelated Copper will help you to actively monitor copper levels when using **Coppersafe®** solution.

Coppersafe® solution may cause an adverse reaction with some sensitive invertebrates. Invertebrates without an exoskeleton such as jellyfish, anemones, etc. should be removed before treatment. **Coppersafe®** solution may be harmful to plants, amphibians and snails. Not recommended for use in Reef aquariums. Do not use **Coppersafe®** solution with fish species that have a known sensitivity to copper.

Follow dosage directions as detailed on the product packaging.

Maracide® liquid (Freshwater)

For infections of: *Ich*, *Chilodinella* (Bluish-white film on fish), *Velvet/Protozoan diseases* and *other external parasites*.

Ichthyophthirius (*Ich*) – Small white spots may cover entire body: fish may rub or scratch against bottom.

Chilodinella – An external parasite causing the fish to secrete excess mucous, resulting in the appearance of a bluish-white film on the body of the fish. In severe conditions, the skin peels off, gills are damaged and the fish dies. Gills are usually attacked first and symptoms of oxygen starvation are noted.

Protozoan Velvet – Tiny yellowish-white spots, loss of color, rubbing or scratching against bottom.

Parasites – Extra mucous, visible spots or worms, rapid breathing, flashing and scratching or rubbing on rocks.

A spot-on product that treats the fish, not the water. **Biospheres®** products make use of a revolutionary technology that delivers the medication directly to the fish. Multi-layered microspheres attach to the fish and break down one layer at a time releasing the medication in a controlled regulated manner. A filming agent, Chitosan, which has a molecular structure similar to the natural mucous coat of a fish, seals the treatment in contact with the tissue surface. Helps prevent re-infection during treatment.

Special notes on Maracide® solution – **Maracide® solution should not be used** in conjunction with any other parasitic treatments. Because of the unique action of the microspheres contained in **Biospheres®** products, care should be used when combining **Maracide®** solution with medications from other sources.

Maracide® solution may cause an adverse reaction with some sensitive invertebrates. Invertebrates without an exoskeleton such as jellyfish, anemones, etc. should be removed before treatment.

Maracide® solution is safe to use with plants.

Follow dosage directions as detailed on the product packaging.

Parashield™ Freshwater/Saltwater solution is a revolutionary new way to help maintain fish in optimum health. Natural oils and extracts are combined with **Bioshield™** (a film forming matrix) to help repair and strengthen a fish's natural slime coat and help provide a protective shield around your fish. A fish's slime coat acts as the first line of defense for fish against parasitic infections.

Special note on Parashield™ solution — Do not exceed recommended dosage. This product may slow biological filtration. During use some sessile invertebrates will retract for the first several hours. This condition will be temporary and may last for up to 24 hours. Tested on Stone Polyp, Brain Favites, Mushroom (Rhodactis), Ricordea Sp., Favia Fragum, Plate Coral Sp., Tubastraea Sp., Knobby Leather Sp., Acropora Sp., Finger Coral (Porites) coral species. All corals and polyps may not react the same way as the test species.

Follow dosage directions as detailed on the product packaging.

Protoshield™ Freshwater/Saltwater solution is a revolutionary new way to help maintain fish in optimum health. Natural oils and extracts are combined with **Bioshield™** film (a film forming matrix) to help repair and strengthen a fish's natural slime coat and help provide a protective shield around your fish. A fish's slime coat acts as the first line of defense for fish against protozoan infections.

Special note on Protoshield™ solution — Do not exceed recommended dosage. This product may slow biological filtration. During use some sessile invertebrates will retract for the first several hours. This condition will be temporary and may last for up to 24 hours. Tested on Stone Polyp, Brain Favites, Mushroom (Rhodactis), Ricordea Sp., Favia Fragum, Plate Coral Sp., Tubastraea Sp., Knobby Leather Sp., Acropora Sp., Finger Coral (Porites) coral species. All corals and polyps may not react the same way as the test species.

Follow dosage directions as detailed on the product packaging.

Fungal Infections

Mardel® Medications to Treat True Fungal Infections

Maroxy® (Freshwater/Saltwater)

For infections of: *True fungal infections on fish and eggs* (whitish tufts of cotton-like material) and *bacterial diseases*.

Maroxy® successfully controls fungus infections caused by Saprolegnia, Ichthyosporidium, egg fungus and related species, and common bacterial infections. It slowly releases small amounts of a stabilized oxygen-chlorine combination which, when used as directed, has an unusual ability to treat a wide variety of tropical fish diseases. Fungus infections can be distinguished from bacterial infections by location and appearance of the fungus. Columnaris (body fungus) is often confused with a true fungal infection. However, Columnaris disease is caused by a bacteria and not a fungus, and affects the whole body of the fish and is often slimy and grayish in appearance. Fungus infections are usually found at the site of an injury or recent attack from parasites. A true fungus infection has a cotton-like appearance similar to a mold found on fruit, bread or cheese, except that on a fish a fungus is usually white. Fungus infections are very difficult to treat and are usually secondary invaders resulting from an injury on the fish or recent wounds from parasites or bacterial infection. Once the fungus starts growing on the fish, it usually continues to grow and enlarge. Unless medication is provided, death results. Fungi often attack dead fish eggs and soon spread to adjacent live eggs, killing them.

Special note on Maroxy® – **Maroxy®** has been shown to be effective against certain gram-negative and gram-positive bacteria. **Maroxy®** can be used to treat fish exhibiting the following symptoms: clamped fins, swollen eyes, heavy or rapid breathing, patchy coloration, or any change in behavior of the fish. All suspected bacterial infections should be treated immediately. **Maroxy®** is not a toxic material but certain people may have a reaction. Use the following antidotes: External antidote: Flood skin with plenty of water. If irritation persists, get medical attention. For eyes – flood with plenty of water and call a physician immediately. Internal antidote: Drink large quantities of milk. Call physician.

Follow dosage directions as detailed on the product packaging.