



# Metro+™

## Pond and Aquarium Fish Treatment

### PURPOSE AND BENEFITS

This product is a dry, powder formulation containing metronidazole a proven treatment for hole-in-the-head (HITH) and head-and-lateral-line-erosion (HLLE) diseases of aquarium and pond fishes. These diseases occur most often in larger fishes such as oscars (*Astronotus ocellatus*), discus (*Symphysodon* spp.), other large cichlids (Family: Cichlidae) and tangs (Family: Acanthuridae). It has been suggested that, at least in one species of tang (palette tang, *Paracanthurus hepatus*), the root cause of HLLE is nutrition based and the lack of sufficient vitamin C in the diet may be a contributing cause. Like the other dry, powder aquarium and pond medication in the Hikari® line this product should be used with [Bio-Bandage® Lite](#) to provide skin slime replacement and vitamins to speed healing.

### COMPOSITION

[Metro+™](#) is composed of a proven antimicrobial, metronidazole, dispersed in a dry carrier base containing an inert electrolyte.

### USES

The metronidazole in [Metro+™](#) is effective against certain protozoan-caused diseases in freshwater and marine fishes. Its primary use is for the control and treatment of hole-in-the-head ("HITH") and head-and-lateral-line-erosion ("HLLE") syndromes in aquarium fishes. These diseases are suspected of being caused by *Hexamita* or *Spironucleus* (for which [Metro+™](#) is the treatment of choice). A secondary use is for the control of ichthyophthiriasis ("ich") in freshwater aquarium fishes and cryptocaryoniasis ("saltwater ich") in marine aquarium fishes. [Ich-X™](#), however, remains the treatment of choice for freshwater and saltwater ich.

### TREATMENT PROCEDURE AND DOSAGE

**Bath Treatment:** For the control of protozoal

disease of aquarium fishes, a bath treatment of [Metro+™](#), used at the rate of one capful (~9.7g) per 20 gallons of aquarium water (which produces a concentration of 5mg/L of the active ingredient) is recommended. Prior to starting a bath treatment a partial water change is recommended. The addition of [Bio-Bandage® Lite](#) prior to [Metro+™](#) will improve performance and help speed healing. Thereafter re-treatment every 24 hours, after a partial water change, is recommended. Continue treatment for 5 to 7 days or until mortalities cease.

**Oral Treatment:** For systemic or internal infections, [Metro+™](#) can be fed to the diseased aquarium fishes by mixing with it with fish food. Use the following directions for making a [Metro+™](#)-medicated feed.

**Dry Medicated Feed:** Start with 4 ounces (= ¼ lb, 113.4g) of dry flake, granular or pelleted feed. Place the dry feed in a suitable clean and dry container with a tight-fitting lid. A wide-mouth jelly jar will work quite well. Next, measure out 1 tablespoonful of [Metro+™](#). Mix the dry feed and medication thoroughly by gently stirring or by closing the container and vigorously shaking it. Next, add exactly 1 fl.oz. (~30 mL) of 190° (190-proof) grain alcohol to the container while gently mixing. Next, close the container and shake it vigorously to insure that the feed and medication are intimately mixed. Examine the mixture\* to make sure it has been well mixed and all ingredients have been wetted by the alcohol. Finally, open the container and allow the alcohol to evaporate completely (this may take 24 hours or more). Heating the container by placing it in a container of hot water will accelerate the drying process. Do not allow water to splash into the mixture. **Do not microwave the wet mixture!** Store the dry medicated feed in this container. To insure its freshness between uses it is best to refrigerate the container, but always allow the container to warm to room temperature before opening to prevent moisture from condensing on the feed

mixture. Discard any medicated feed mixture that acquires a mold growth.

**\*CAUTION:** Do not perform this procedure around an open flame or other source of ignition; alcohol fumes are highly explosive.

**Gelatinized Medicated Feed:** This process is similar to the preceding one in that the dry ingredients are first mixed and then the mixture is moistened. However, instead of drying the resultant mixture, it is allowed to gel and then stored in a freezer. Start with 3 ounces (85 g) of unflavored gelatin and 1 ounce (28.35 g) of flake, granular or pellet feed. Grind the dry feed to a powder size that approximates that of the dry gelatin particle size. Next mix the ground dry feed and the gelatin together in a suitable mixing container (e.g. a plastic bowl). Next add 1 tablespoonful of Metro+™ to the gelatin-feed mixture. Stir this mixture to insure complete mixing of the dry components. Next heat 1 pint of tap water to near boiling (do not boil!) and add 2 to 3 fl.oz. to the dry mixture with vigorous stirring. Once all the mix is thoroughly wet add an additional 2 to 3 fl.oz. of the hot water and continue to stir until the mixture starts to cool and stiffen. If the mixture appears to be too dry to easily spread flat on a piece of wax paper add more hot water, with mixing, until the mixture can be easily spread to a layer about ½" thick. Spread the mixture to an even thickness on a piece of wax paper and allow it to cool in a refrigerator. Once cooled, cut the gelled mixture into ½" x ½" squares and place in a plastic bag and place it in the freezer for storage.

**Feeding Medicated Feed:** Use the medicated feed in place of the usual feed. Feed at least twice a day and feed as much as the fishes will consume in about 5 minutes. Small amounts of uneaten feed will usually be cleaned by as the fishes scavenge between feedings. Feedings may be accompanied by bath or dip treatments of the same medication as is incorporated into the feed. Continue feeding for at least three days beyond the disappearance of all signs of the disease. Stop feeding once a cure is affected, and do not use the medicated feed as a general feed when disease treatment is not being attempted. Continued feeding of medicated feeds can result in the development of drug resistant diseases.

## CONTRAINDICATIONS

There are no known contraindications to the use of Metro+™ in aquarium or pond fishes. The product is ineffective against bacterial and fungal infections.

It is ineffective against diseases caused by worms, flukes or crustaceans.

## STABILITY

Metro+™ is stable in its original container when stored at room temperature. It should be stored between 40°and 100°F. Care must be taken to prevent contamination of the product by foreign matter; do not introduce water into the bottle.

## COMPATIBILITIES


Metro+™ can be expected to be compatible with all known water conditioners used in aquarium and ponds with the exception of conditioners containing permanganates. Do not use Metro+™ with other treatments.

## TOXICITIES

There are no known toxic reactions with Metro+™.

## SAFETY

Avoid skin and eye contact. Avoid inhaling powder or dust. Use in an area with minimal air movement to prevent blowing of powder or dust. In case of eye contact immediately flush with water for at least 15 minutes. Get medical attention. In case of skin contact, wash with a mild soap and warm water.

 **WARNING:** This product can expose you to metronidazole, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## PACKAGING

Metro+™ is supplied in a convenient 3.5 oz. (100g) bottle with a convenient measuring cap.

## CONTACTING US

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