

Group Two Experimental Design

Four Aquapods®, which were set-up and previously matured, contained live rock and crushed coral substrate. Corals were obtained from the wholesaler that exhibited typical damage (disease) that is often seen in coral reef aquariums in the hobby. These were of the coral group Goniopora (See Photographs C-1, C-2, C-3). Most of the loose damaged tissue was lost during transit from the wholesalers. An example of the dead tissue that was present can be seen on Photograph D which was taken off a previously diseased coral.



Photograph C-1



Photograph C-2



Photograph C-3



Photograph D

Example of previously diseased coral
Note the brown gel-like necrotic tissue

Before any coral were added to the test aquariums, samples were taken of each to determine the presence of any organisms. Proprietary methods were employed to remove samples from the coral without harming them. These samples were then examined microscopically.

The examination revealed a very heavy infestation of unknown flatworms (Photograph E), protozoa (Photograph F), and ciliates. Some known to feed on the zooxanthellae. Gram stain slides were also prepared due to the heavy extent of bacterial activity in areas of necrosis. The corals were then returned to the test aquariums and allowed to rest for 24 hours before treatment was initiated.



Photograph E
Flatworms



Photograph F
Unknown Protozoa

Dosage Rate for Coral Treatment

The following day the first dosage of **MICROBE-LIFT/Herbtana** was added. Dosage was 2 mL per ten gallons. This was repeated for the next five days. Samples of each coral were microscopically examined each day. Eight hours after the first day of treatment, samples were taken and examined. Ciliates were contracted. The unknown protozoa were moving extremely slowly and there were very few flatworms present. The corals improved by the second day of treatment and began to open and extend. The third day indicated there was no further build up of dead brown tissue or white web-like tissue. Fourth day revealed no protozoa or flatworms at all. Final dosage was applied on the fifth day. (See Photographs G)

Examination

The coral was microscopically examined on the sixth day and found to be totally free of the various organisms originally found (See Photographs G-1, G-2, G-3, G-4). Bacterial examination did not yield any one particular bacterial causative agent. Most were possibly opportunists.

Conclusion & Discussion

The **MICROBE-LIFT/Herbtana** caused a narcotic effect on the organisms present on the corals. Movement was obviously faster prior to treatment with little, or no disorientation. The organisms rapidly left the coral or dropped off in a very short period of time. Once they were gone, the coral's polyps fully extended and started feeding normally. Damage to the tissue, once inflicted, may have attracted these organisms in large numbers causing more and more tissue irritation and damage resulting in dying polyps. Due to the large numbers of organisms present, further and continuing damage began as healthy tissue was fed upon by the myriad of protozoa and bacteria. **Once treated with the Herbtana, this natural expellant caused the removal or dropping off of these organisms allowing the corals to return to a normal condition and eliminating stress.**

Damage to the corals exposed the skeletal rock. It is unknown whether this exposure will act as a new base for regeneration of coral polyps. Corals were normal for three weeks after treatment with no sign of reinfestation.

As for the fish, once the protozoan and flagellates were expelled from the fish, normal behavior was noted. **The opportunity for secondary bacterial or fungal infection was also lessened due to the accelerated speed that the disease causing protozoa were expelled from the fish.** Typically, the longer they remain the more tissue damage they produce.



Photograph G-1



Photograph G-2



Photograph G-3



Photograph G-4

Study Conducted by
Ralph Van Blarcom,
Fish Disease Diagnostician (FDD)



ITEM #
POLPLTCATHERB



Ecological Laboratories INC.
2525 N.E. 9th Avenue • Cape Coral, FL 33909

Providing Aquatic Solutions Since 1976

Visit us at: www.microbelift.com
World Rights Reserved



Herbtana Efficacy Testing

100%
Natural
Expellant

NEW
TECHNOLOGY
finally, a product
effective against
saltwater Ich
that is
reef safe!



Provides a chemical-free treatment effective against these parasitic diseases:

- White Spot (Ich)
- Flukes (gill & skin)
- Chilodonella
- Costia
- Trichodina
- Oodinium

Shake Well Before Using
Treats 236 gal. (893 L) for 10 days
net. wt. 16 fl. oz. (473 mL)

Reef & Marine Environments:
ITEM# HERBSW16
Freshwater Environments:
ITEM# HERBFW16

Visit us at www.microbelift.com
Ecological Laboratories INC.
Providing Aquatic Solutions Since 1976

MICROBE-LIFT/Herbtana

MICROBE-LIFT/Herbtana is a unique, herbal, immune-enhancing stimulant, which reduces: skin flukes (*Gyrodactylus sp.*), gill flukes (*Dactylogyrus sp.*), Ich (*Ichthyophthirius multifiliis*), *Oodinium sp.*, *Costia sp.* (*Ichthyobodo necator*), *Chilodonella sp.* and *Trichodina sp.* Parasitic infections are characterized by symptoms, such as: milky skin, flashing and heavy breathing. However, they can only be diagnosed with certainty through microscopic examination.

Naturally controlled by the fish's immune system, parasites are present on most fish in very low levels at all times. When stress levels increase, the ability of the immune system to respond to its requirement to control the natural level of parasites is directly affected. This poor response allows parasites to increase in number, thus causing any of the serious, above mentioned health issues in the host fish.

MICROBE-LIFT/Herbtana supports the fish's immune system, driving off the excess parasites. Since they cannot return to the fish during treatment, the majority of the parasites will starve without a host.

Caution

Do not use with any other medications or treatments. Do not use with any algacides or copper based products. Remove any carbon in your system as carbon will filter out the Natural Expellants.

MICROBE-LIFT/Herbtana is also available for freshwater!

Also available: MICROBE-LIFT/ Artemiss

Effective against these bacterial diseases:

- Bacterial dropsy
- Fungus
- Milky skin
- Fin/tail rot
- Bulging eyes
- Ulcers
- Mouth rot



ITEM# ARTSW16

ITEM# ARTFW16

Group One Experimental Design

Four Aquapods®, which were set-up and previously matured, contained live rock and crushed coral substrate. To each were added three marine angelfish, ten Coral Beauties and two Rusty Angelfish (See Photographs A Below). A fifth Aquapod® was also used that was previously matured. This contained various polyps, live coral, live rock, turbo snails, crabs and other small invertebrates. To this Aquapod® was added one medium-large juvenile Emperor Angelfish. (See Photographs A Below).



Photograph A-1
Coral Beauty

Photograph A-2
Rusty

Photograph A-3
Emperor

Group One Experimental Design Continued

Before any fish were added to the test aquariums, samples were taken of each to determine the extent of the parasite infestation. Proprietary methods were employed to remove samples from the fish without harming them. These samples were then examined microscopically.

The examination revealed a very heavy infestation of *Cryptocaryon irritans*, the etiological agent in Marine White Spot, and heavy levels of *Brooklynella hostilis* and *Amyloodinium ocellatum* (Marine Velvet). Gram stain slides were also prepared due to the heavy extent of bacterial activity in areas of necrosis. The fish were then returned to the test aquariums and allowed to rest for 24 hours before treatment was begun.

Dosage Rate for Fish Treatment

The following day the first dosage of **MICROBE-LIFT/Herbtana** was added. Dosage was 2 mL per ten gallons. This was repeated daily for the next five days. The fish improved by the second day of treatment. Appetite increased as well. By the fourth day no signs of white spot were seen visually. The final treatment was administered on the fifth day. On the sixth day the fish were removed and fully examined.

Examination

The fish and tissue samples were microscopically examined. No signs of the previous infestations were seen. Gill examination showed a very slight hyperplasia, which could have manifested itself from the protozoan infestation. Earlier testing of **MICROBE-LIFT/Herbtana** exhibited no gill hyperplasia even at higher dosages.

Benefits of MICROBE-LIFT/Herbtana and MICROBE-LIFT/Artemiss

- 100% Natural
- Do not result in resistance
- Non-toxic
- Environmentally friendly
- Artemiss is effective against pathogenic bacteria such as *Aeromonas sp.*, *Pseudomonas sp.*, *Cytophaga/Flavobacterium/ Flexibacter sp.*, and also many antibiotic-resistant bacteria strains
- Herbtana is effective against parasites such as *Gyrodactylus sp.*, *Dactylogyrus sp.*, *Chilodonella sp.*, *Trichodina sp.*, *Ichthyophthirius multifiliis*, *Ichthyobodo nectar* and *Oodinium sp.*,
- When used as directed are safe for all salt, fresh and brackish water fish. Also reef and plant safe.
- Do not affect nitrifying bacteria (biofilter bacteria)
- Do not color the water, stain or affect silicone sealings
- No harmful residues **MICROBE-LIFT/Herbtana** and **Artemiss** are completely biodegradable
- More effective than home remedies

In most cases, fish diseases are caused by unhealthy living conditions, such as: overcrowding, poor water quality or an improper biotope. To prevent recurrence, examine the underlying cause of the problem. Quarantine new fish for at least 4 weeks.

When water quality is poor, the immune system of the fish cannot be enhanced by **MICROBE-LIFT/Herbtana** or **Artemiss**. Ammonia and nitrite should not be above 0.4 ppm and the pH must be on a level suitable for the particular species of fish.

Background:

The testing that follows was done on marine fish and corals that were significantly infected with various known disease causing organisms as well as unknown organisms that are associated with tissue damage.

This testing was divided into two groups—Marine Fish “Group One” and Marine Coral “Group Two”. The sick fish and corals were gathered on site from various wholesale operations that import and or collect marine fish and corals from various points around the world for the aquarium trade. The damage observed on these organisms has been described in many publications and are common problems in the hobby.

Marine Fish Background Group One

The marine fish gathered for this testing were exhibiting a definite heavy protozoan infestation, primarily *Cryptocaryon sp.* later identified as *Cryptocaryon irritans*, other protozoans, and ciliated flagellates.

Coral Disease Background Group Two

The primary topic will be centered on protozoan and other parasitic infestations. Although bacteria may be associated with some disease characteristics, a definitive role has not been established in many of the studies of wild coral. The information about what comprises coral disease is still in its infancy. The names of many diseases are usually given in description of tissue damage, bleaching, recession events and color changes as well as physical appearance. Names include Black Band, White Band, Shut Down Reaction, White Pox, White Plague, Yellow Blotch, Red Band, Brown Band and Purple Ring. The list is endless. While many of these descriptions may truly be caused by disease pathogens, it is the authors belief that other factors are linked to physical stress, nutritional deficiencies, or other environmental problems.

