# HOW DO ALGAL TREATMENTS WORK?

The Fish Vet

There are a variety of algae that can plague your aquarium or pond; they range from tiny suspended cells to long filamentous forms or produce a scum on the surface and their colours range from green through to red, brown and black. Algal spores are ubiquitous and are just hanging around waiting for the just right conditions to grow. This occurs when there is sufficient light, warmth and nutrients (nitrate, phosphate, iron) for them to establish themselves.

There are a number of "tools" available from your local fish shop to help combat the problem if your initial attempts failed (as outlined in the fact sheet "Algal Problems?"). I will briefly describe the science behind how each of these "tools" work and their application in the pond and or aquarium.

## UV Clarifiers

This is a very high tech and expensive piece of equipment, but it is the safest and most effective method to clear suspended algae and other minute organisms from the water. The sleeve contains a special bulb that produces UV radiation that deactivates the DNA and RNA of cells passing through, killing them in the process. The dead algal cells then clumps together and either decompose on the bottom or get sucked out by the filter.

## Flocculants

These are chemicals (usually aluminium sulphate) that cause the suspended algal cells to clump together which then either sink to the ground or float to the surface. This can then be manually removed with a fine net or sucked up by the filter. It is important to remove the algae post-treatment because any decaying material will provide nutrients for the remaining algae and create another algal bloom.

These chemicals may alter certain water parameters like pH if the KH is too low (bring a water sample in to be tested by Dr Loh if you are concerned), but should be rather safe for fish and aquatic plants. However, the effects are only temporary if the predisposing causes are not addressed (see fact sheet on "Algal Problems?").

## Ion-exchange Resins

High nitrates and phosphates can predispose your water feature to algal blooms. Ion exchange resins remove nitrates and swaps them for other ions. Phosphate removers are either aluminium based (white ones) or based on iron oxides (rusty black ones). Ferric alum is used to prevent algal growth and works by removing phosphorus from the water. A rate of 50g of ferric alum per 1000L of water is used and administered by placing a block in a porous bag attached to a float.

Some chemical mixtures also claim to remove nitrites. It is recommended that ion-exchange resins only be used if your water source contains high levels of phosphate and nitrate.

# Barley Straw

It is thought that the aerobic decomposition of barley straw releases chemicals (humic acids that are later converted to hydrogen peroxide in the presence of sunlight) that inhibit algal growth and that the decomposition encourages the growth of microbes that feed on algae (you must ensure adequate water flow over the material as anaerobic decomposition of straw produces a harmful breakdown products). This treatment option takes a while to work and is dependent on the water temperature and the amount of sunlight. For best results, the straw should be placed in a warm, sunny position (shallow margins of the pond). These chemicals are produced after soaking for one month and continues for six months.

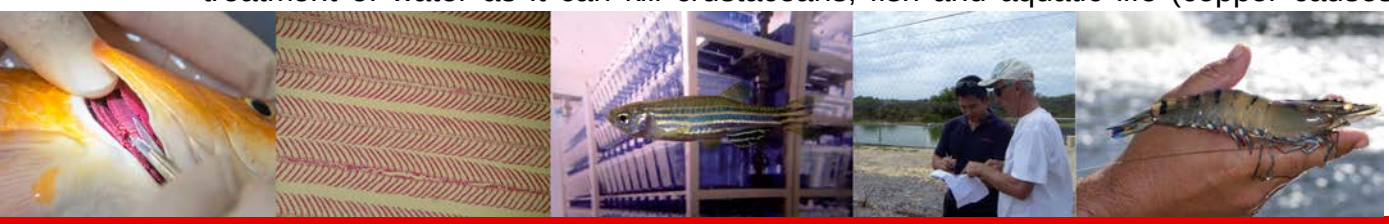
Literature suggests 5-100g of barley straw per 1,000L of water. It can be applied in plastic mesh bags. It can take one month to start working but lasts for up to six months. Some companies have gone a step further and bottled the stuff - Barley Straw Extract. This natural treatment is safe for plants, pets and children.

*It is important to increase aeration to enhance the breakdown of the straw and for the well-being of the fish (decomposing matter removes oxygen from the water).

# Algicides

Aquatic herbicides are very effective and produce quick results. However, care will need to be taken depending on the type chosen. For example, some algicides can stunt the growth of aquatic plants or even kill them, and some can kill fish and invertebrates.

Copper sulphate is an example of an algaecide that is no longer recommended for treatment of water as it can kill crustaceans, fish and aquatic life (copper causes



irritation to fish causing excess mucus production, making it difficult for fish to breathe, and it interferes with their olfactory senses). Blocks may be used to treat water in fish-less water features, but these can stain equipment green.

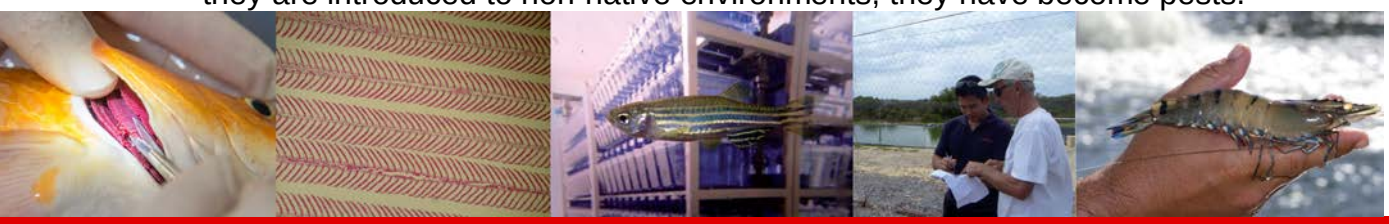
Cupricide and Cupramine are chelated copper products that kills algae with fewer toxic effects than copper sulphate and does not precipitate out when there is a high concentration of carbonate. Water treated with cupricide can be used on garden plants. But despite its reduced toxic effects, it should still be used with care when treating ponds containing fish.

Products containing simazine are one of the safest products for killing algae as it is regarded as virtually non-toxic to bees, aquatic animals and many mammals when used at the specified dose rates. Simazine will continue to kill algae for several days after application, with a half-life of approximately 30 days (this is dependent on the level of algae present, the degree of weed infestation, and other factors). Because it is a herbicide, it will also kill garden plants, so treated water should not be used on the garden for at least 14 days.

## Biological Control

This method relies on the addition of microbes to control algae. Most of these work by boosting the populations of certain bacteria which remove the nitrate and phosphate the algae use as their food source. This method takes a while to take effect.

In some parts of the world, silver carp have been used since they have specialised gill rakers to sift out the algae that make up their diet. Though, in some parts where they are introduced to non-native environments, they have become pests.



## Coloured Pigments

Adding colour to the water reduces the amount of light and/or the right light wavelengths getting to the algae. However, it will also do the same for your submerged aquatic plants, make your water look funny and make it difficult for you to see your fish. Also, it may stain certain types of cement, rock and plastic.

## Chlorine Solutions

This should only ever be used for water features that do not contain fish or plants as it can kill crustaceans and fish. Additionally calcium hypochlorite is not recommended for water bodies that contain large amounts of organic material since it interfere with efficacy. Chlorinated water is usually safe for your four-legged pets to drink from, but are lethal to aquatic organisms.

NB: Tap-water is chlorinated and this is the reason why you use conditioners before adding to the aquarium.

## Comments

Chemicals should never be the sole treatment. It should be used only after, or in conjunction with management strategies. These include preventing animals fouling water, planting trees and perennial grasses at inflow areas into water supplies to help stop nutrients and eroded soil entering, controlling soil erosion as phosphorus particles stick to eroded soil particles, avoiding excessive use of fertilisers, raise pond walls above ground to prevent run-off water from entering ponds.

To minimise problems due to reduction in oxygen as algae die and decompose, increase aeration the day before you begin treatment and continue to do so throughout the treatment. Also remember to remove algae as they die, and occasionally, death of toxic algae can cause a sudden release of its toxin, which can persist for several days.

For more detailed information contact **The Fish Vet**

# References

The information for this fact sheet was sourced from **Practical Fishkeeping.** Issue7, July 2002 and **Self-Assessment Colour Review of Ornamental Fish** by Lewbart, with modifications.

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