

Nitrite NO₂

Nitrite is a toxic compound that can become problematic in a pond or aquarium. It is the direct product of the conversion of Ammonia by nitrifying bacteria in the system.

Nitrite is not nearly as toxic as Ammonia but, in strong concentrations it will bind with the hemoglobin in the fish's blood. This can prevent the fish extracting sufficient oxygen from the water causing extreme stress or even suffocation. This condition has been referred to as "Brown Blood Disease".

To test for Nitrite using the Tetra Test Kits:

Fill the test tube with 5ml of water and add 7 drops of reagent one, shake tube, add 7 drops of reagent two, shake tube. The reaction will develop within a few seconds.

A positive Nitrite test is indicated by an orange or red colour. The more concentrated the Nitrite the stronger the colour will be red.

Corrective \ Preventative Measures.

Should a high level of nitrite be detected and the fish species will tolerate an increase in salinity, then salt can be added to the water. The salt will help prevent the nitrite being absorbed into the blood and thus reduce or eliminate the effects of "Brown Blood Disease".

Small regular water changes are always a good practice and can help to dilute the Nitrite. I would suggest at least 10 to 20% weekly. Should a severe spike occur larger more frequent water changes should be carried out.

It is vital that every pond or aquarium is equipped with a suitable filter system. During normal operation bacteria present in the filtration system - known as the biomass - will convert ammonia into nitrite and ultimately nitrate a less harmful compound.

Invest in a system that will not just do the job but will be completely and totally on top of the job. Bigger is always better at least when you're talking about filtration systems.

The filter system should be given ample time to mature and develop a healthy biomass. Stocking a system with too many fish too quickly will often cause spikes. Stock fish gradually allowing several weeks for bacteria to develop between each new introduction. Patience when stocking is very important.

Excessive amounts of feeding is also a concern. Fish are cold blooded and have minimal energy requirements. Ornamental fish are often fed far too much food and would suffer no ill effects if the amount was reduced. Over feeding will also create clarity issues and can lead to excessive algae problems.

Most fish anti parasite and bacterial treatments will have a negative effect on the biomass so they should not be used without good reason. Whilst treatments are unlikely if used at sensible levels to completely retard the filtration they can knock back the biomass to a level where a spike develops. Under no circumstances should these treatments be used in a new system or when a system is already struggling with ammonia / nitrite.

A healthy filter biomass requires a constant flow of oxygen rich water. If the filter operation is interrupted for any length of time it can lead to a dieback of the biomass. Always maintain your pump and also ensure the filter is not obstructed with heavy soiling. Whenever practical, use system water to wash media and it goes without saying to avoid the use of cleaning chemicals.

To help establish and refresh the biomass use a regular dose of filter boosting treatment. A small regular application will be much more effective as opposed to a large occasional dose.

Extra Notes

Different species of fish have wildly varying tolerances to Nitrite and for some even small concentrations can be problematic. Delicate fish such as Discus or Neon Tetras for example will struggle more with Nitrite than a common carp or goldfish.

Typically a filter will become effective against Ammonia within a matter of days, however effective removal of Nitrite takes considerably longer, weeks or even months. The importance of regular partial water changes can not be overstated.

It is important to understand that whilst Nitrite is never to be ignored in an aquarium or fish pond, it may be something that will be encountered from time to time. Especially during the cycling of a new system, or after antibacterial/parasite treatments have been administered.

Testing for nitrite on a regular basis will give you a useful insight into how well your Aquarium or Pond is managing with the fish load and most importantly give you an opportunity to take corrective measures before a problem becomes serious.

Should Nitrite become a recurring or persistent problem it is a safe bet that your pond or aquarium is overstocked and underfilter.

