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Copper against Oodinium in Stocks of Nothobranchius

You possibly know that copper is a very effective metal against attacks made by Oodinium (rust disease, colisa disease, velvet, sulphur disease, etc.) but also this metal is active in the eradication of hydra and against the mysterious Cryptocoryne disease.

In tanks with mineralic bottom layer and alkaline water (pH well above 7.0) the use of solid copper in contact with the water of the tank will rarely be dangerous, possibly because the copper ions (Cu^{2+}) will not resolve into the water in a concentration dangerous to common aquarium fishes and the higher plants normally used. According to some series of experiments using weak concentrations of copper chloride in rain forest tanks against hydra, oodinium and blue green algae I found (Lebistes, different species of killies: Aphyosemion etc.) that a concentration above 0.002 milliequivalents per liter of copper (as Cu^{2+}) may be dangerous. $0.002 \text{ meq/l of } \text{Cu}^{2+} \text{ is } 0.002 \times 31.8 = 0.064 \text{ milligrams per liter of pure copper. That is a very low lethal concentration indeed.}$

Therefore we normally will be very careful using any sort of copper mineral in contact with the aquarium water if the pH is below 7.0. On the other hand peat will actively take up the copper ions formed so the water of the tank may be in contact with solid copper even in rather acidic water for a rather long time if peat is present in the tank also. However no one knows how long the fishes will be safe, nor how acidic the water can be without any risk. A friend used solid copper against the "normal" severe attack of Oodinium on his maturing *Nothobranchius palmquisti* and had very fine results. I have asked for exact information on water conditions and have already set up my own series of experiments. Indeed, some improvements of the keeping (in particular the maturing) of *Nothobranchius palmquisti* may be found until we discover a better way of keeping these feeble fishes. Now after about one week using solid copper (about 2 square inches of fine "wire cloth" in a 16 liter tank, peat bottom, normal "rain water" type) all snails in the tank are very dead. None of the half-grown *Nothobranchius palmquisti* are dead and the rather severe attack by Oodinium practically is over. The Nothos seem to be unaffected (until now).