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Killing the hydra II (Tanks with Peat and Peatmoss)

The method (Hueckstedt's) killing hydra by making the aquarium water acetic did not work in a satisfactory way in all tanks with a peat layer. Certainly all hydra visible soon turned white and died, but after some days or weeks hydra were seen in some of the tanks. All these tanks had a layer of very coarse and filamentous peat moss.

This may be explained by certain activities of the peat (of all peat). In Denmark the common peat or peat moss used for gardens will not change the pH of aquarium water in a remarkable way. But if you use German, Scottish, etc. peat you possibly will find that your aquarium water will be very acetic indeed. Such peat has been collected in certain types of moors or bogs where the peat will not be in contact with the surface waters of the district, whereas the bogs where we get our peat are "low bogs" where the peat very often will be in contact with the natural surface waters. Peat is an active material. It freely will exchange ions with the surrounding waters, not cations only, but also anions. If you have neutral water running through a sample of "German peat" the outflow indeed will be very acetic normally. O. Wagner measured pH about 2.7 in such water. The peat in such a sample will be charged with hydrogen ions. In contact with water which holds metallic ions, these will be taken up by the peat and hydrogen ions will be liberated, making the water acetic. Certainly we may consider the peat as a "Cation exchange resin" which has properties mostly like the "weak cation resins". Also anion exchanging properties are found in peat (see the paper "demineralization"). Therefore the aquarium water which I made acetic using phosphoric acid or sulfuric acid will not be able to maintain the pH I wanted, for any long time. The peat will take up some of the hydrogen ions and liberate some metallic ions, and water, after some days, will hold the same value of pH as before the adding of acid. Some hydras during treatment will sink to the bottom and hide in the coarse and loose peat. The water here will not be as acetic as the water over the peat bottom and hydra will not be killed. This interesting question needs further comments.