

***amtra***

s y s t e m



**Fish diseases in the  
aquarium.**

What makes fishes fall ill? And why?  
How to recognise and treat diseases  
and eliminate causative factors, and  
how best to avoid ill-health.

## Healthy fishes mean greater aquarium enjoyment.

How does one go about diagnosing a fish disease? What is the right method of treatment? And what can be done to prevent diseases from occurring in the aquarium at all? On the following pages Dr. Biffar, one of the very small number of vets in Germany specialising in ornamental fishes, provides invaluable advice on maintaining your fishes in good health so as to obtain maximum enjoyment from your aquarium.



The new products in the **amtra medic** range provide all aquarists with a comprehensive "medicine chest" for combatting all fish diseases and symptoms that can be treated using freely available active ingredients.

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## The amtra system provides a comprehensive "medicine chest" for aquarists.

**amtra medic 1** to **5** represent a new generation of medications, developed by the **amtra medic** program as a complete and easy-to-use "first aid kit" for treating all the major fish diseases. Unlike traditional medications **amtra medic 2, 3, 4** and **5** come in tablet form, containing pure active ingredients. It is thus easier than ever before to treat sick fishes quickly and efficiently. The dry format ensures far greater stability of the active ingredients than in liquid medications, and thus guarantees there will be no deterioration in efficacy in the course of time.

**amtra medic 2, 3,** and **5** are based on a single active ingredient in each case. This permits the targetting of specific diseases without the effects, and above all the side-effects, of substances irrelevant to the case in question. These single-ingredient preparations are appreciably better-tolerated, which may mean the difference between life and death for seriously weakened fishes. In the event that several different diseases are involved, or a precise diagnosis proves impossible, the ingredients contained in **amtra medic 2, 3, 4** and **5** can be used together, deliberately and without any risk. This exceptional capacity for combination, not only with each other but also with prescription drugs (antibiotics and anti-parasite drugs), has already proved invaluable in the professional sphere.

A significant advantage is that treatment recommendations from the hobby literature are easily followed, as all the normal important agents are to be found individually in a specific product:

Recommended agent	>	amtra product
<i>Malachite green (oxalate)</i>	.....	amtra medic 1
<i>Methylene blue</i>	.....	amtra medic 2
<i>Chloramine T</i>	.....	amtra medic 3
<i>Acriflavine</i>	.....	amtra medic 4
<i>Metronidazole</i>	.....	amtra medic 5

Each **amtra medic** product represents one of the important agents used to treat diseases in ornamental fishes.

Furthermore, **amtra medic** products offer a large variety of additional potential uses. Thus **amtra medic 2**, which has a positive effect on the oxygen-uptake capability of the blood, is a valuable aid in the safe and stress-minimised transportation of fishes, and also prevents egg fungus - a positive benefit to breeders. **amtra medic 3**, used at high concentration, can be used as a highly effective disinfectant for the aquarium and its equipment. In addition its exceptional and rapid degradability minimises any danger to the fishes. The same applies to **amtra medic 4**.

## Diseases of ornamental fishes: symptoms, treatment, and prevention.

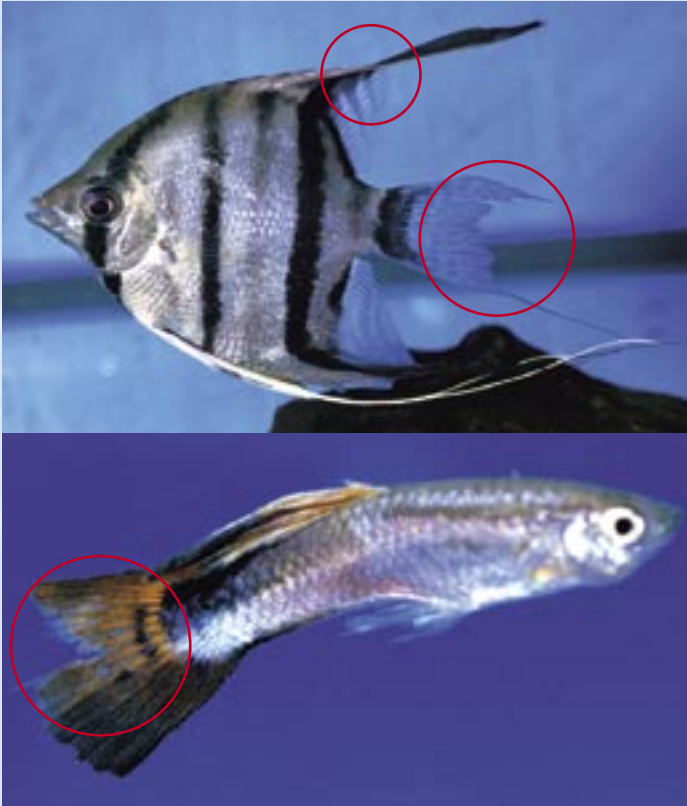
The majority of diseases affecting fishes are infectious, caused by viruses, bacteria, and parasites. If these pathogens multiply in vast numbers in or on the fish, they can cause massive damage to the organism by depriving it of life-essential substances that they require for their own metabolic processes, and/or by producing ichthyotoxic substances as a result of those processes. In both cases the health of the fish is affected and the result is diseases manifesting in a huge variety of symptoms.

The sooner and more accurately infectious diseases can be diagnosed and treated, the greater the probability that the pathogens will be successfully eliminated and the fish will make a full recovery. For this reason every aquarist should regard it as his duty to observe his pets carefully on a regular basis, as only by the early detection of diseases and the pathogens causing them can he hope to combat them successfully and without losses.

The commonest symptoms manifesting in ornamental fishes are listed on the following pages, together with their causes (pathogenic and other), suggestions for treatment, and sensible measures for prevention.

### Symptom 1:

Fin erosion, fin damage, clamped fins.



Angelfish (*Pterophyllum scalare*) (above) and guppy (*Poecilia reticulata*) (below) with clamped dorsal fin and a high degree of erosion of the caudal fin, typical of bacterial and/or parasitic infection.

**Clinical picture:** The fins of most fishes consist of very thin membranes, amply supplied with blood-vessels, supported by the fin skeleton. Numerous pathogens choose to attack these areas. The result is easily recognisable damage visible as splits in the membrane and/or superficial clouding of the fin edges. These symptoms are most evident in the dorsal and caudal fins.

**Cause:** The commonest causative organisms are bacteria, but unicellular parasites, especially *Ichthyobodo necatrix* (Costia), and skin flukes may parasitise the fins and lead to fin erosion.

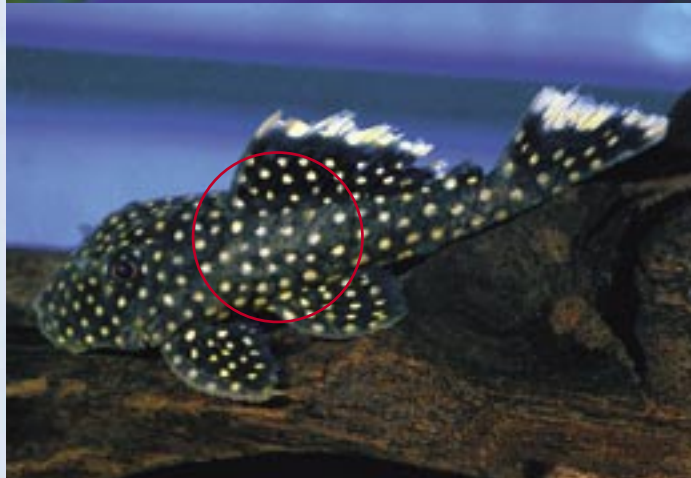
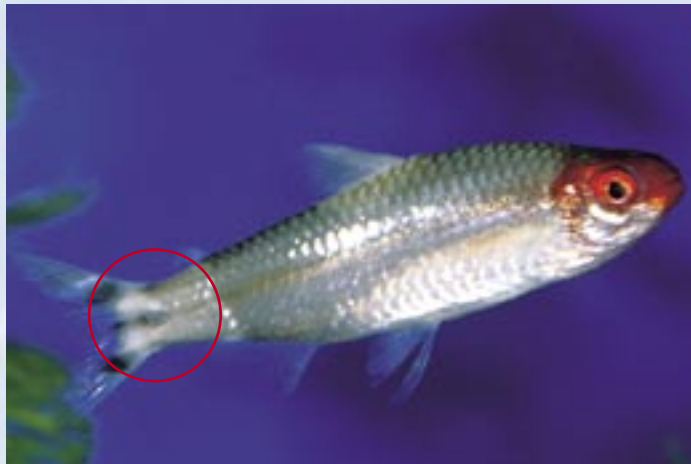
**Treatment:** Treatment should be achieved using **amtra medic 3** which specifically combats external bacteria and skin flukes. It is possible to use **amtra medic 4** simultaneously or subsequently to eliminate any possible *Costia* infestation. In cases where fungal infection has spread to the fin base then subsequent additional treatment with **amtra medic 2** is recommended.

**Prevention:** Because the delicate fin membranes are particularly sensitive to unsuitable water conditions, the latter should be tested regularly. A sudden drop in pH and high levels of metabolic waste products (such as ammonia and nitrite) are particularly harmful. It is recommended that these problems are prevented by regular use of **amtra pH-constant** to stabilise the pH of soft water, and **amtra clean** to accelerate detoxification of ammonia and nitrite in all aquaria.



## Symptom 2:

**Skin cloudiness, loss of colour, inflammation.**



Rummy-nose tetra (*Hemigrammus bleheri*) (above), with clearly visible loss of colour in front of the caudal peduncle. Armoured catfish (below) with milky discoloration of the lower flank below the dorsal fin.

**Clinical picture:** Cloudiness of the skin is normally a direct consequence of increased mucus production by the epidermis. This mucus conceals the pigment cells and causes the fish to appear very pale. While this mucus protects the fish from harmful outside influences, a very thick coating of mucus can limit the essential exchange processes that take place via the skin and gills. Inflammation may result from such disturbances to skin function.

**Cause:** The same pathogens that initially attack only the fins (see fin damage, pp 6-7), may go on to multiply and parasitise the skin. As well as bacteria, skin flukes, and *Costia*, unicellular parasites of the ciliate group (eg *Chilodonella* and *Trichodina*) may be involved in such changes to the skin.

**Treatment:** Either **amtra medic 3** or **amtra medic 4** should be used for treatment. In particularly severe cases both medications can be administered simultaneously. In the event that there is an improvement, but not a complete cure, after 4 days, treatment can be repeated after a partial water change.

**Prevention:** Pathogenic skin infections are particularly likely to occur where the skin is compromised by unsuitable water conditions. In order to prevent this, the water should be treated with **amtra care** (containing Polyvidon) at every water change. Fluctuations in pH, which can also harm the skin and are particularly likely in very soft water, should be prevented using **amtra pH-constant** (use **amtra kh-aktiv** in harder water). **amtra clean** should be used regularly to prevent the build-up of toxic nitrogenous compounds.



### Symptom 3:

Distended gillcovers, respiratory distress.



Juvenile firemouth (*Thorichthys meeki*) exhibiting a high degree of respiratory distress, caused by a severe infestation of gill flukes.

**Clinical picture:** Distended gillcovers and "pumping" respiration with an increased respiratory rate are commonly the visible signs of a gill infection causing inflammation of the gill epithelium and impeded oxygen uptake.

**Cause:** The gills, with their blood-rich delicate tissues, are a favourite site of attack by bacterial and parasitic pathogens. Flexibacter, flagellates, and gill flukes are typically involved in such disease episodes.

**Treatment:** All potential causes of gill infection can be treated in their early stages using **amtra medic 4**. In advanced cases **amtra medic 3** should be used. A partial water change should always be made before any repeat dose is administered.

**Prevention:** Because respiratory problems can be caused by incorrect water conditions in the absence of the pathogens listed above, water parameters should always be checked in the event of breathing difficulties occurring. Correct temperature and a properly functioning biological filter (with the outflow creating movement of the water's surface) are prerequisites of suitable conditions.



**Symptom 4:**  
**Fungus.**



Catfish (*Trachelyichthys* sp.) (above) with fungus at the base of the left-hand pectoral fin. Mottled molly (*Corydoras sodalis*) (below) with a cottonwool-like fungus infection at the front of the dorsal fin.

**Clinical picture:** Fungal infections are among the most easily recognisable fish diseases. They are symptomised by cottonwool-like growths which often start at the base of a fin and can spread to affect the entire body of the fish.

**Cause:** The majority of fungal infections in ornamental fishes are caused by *Saprolegnia*, but occasionally fungi of the genera *Phythium* and *Achyla* may be involved.

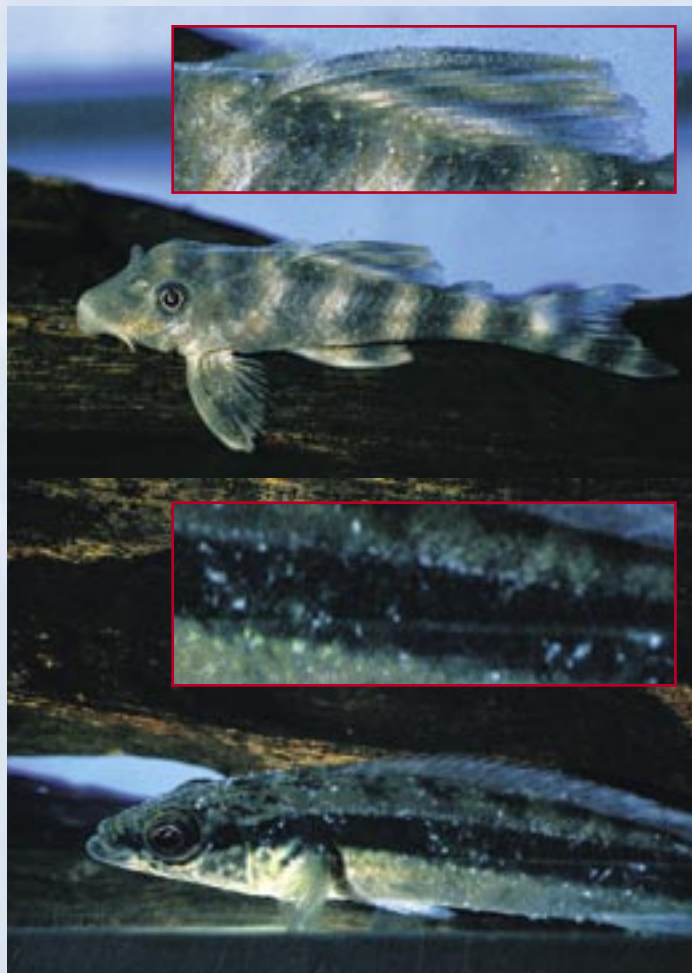
**Treatment:** In their advanced stages fungal infections can prove extremely stubborn, requiring very tedious repeated treatment. For this reason the fishes should be kept under constant observation so that fungal infections can be treated without delay before they spread. **amtra medic 2** as well as **amtra medic 4** can be administered for this purpose. In particularly persistent cases the two medications can be used simultaneously to reinforce their effect.

**Prevention:** Because fungal infections are particularly likely to attack already-damaged skin, one of the most important prerequisites of prevention is the provision of water conditions suited to the species in question. For this reason the best protection against harmful fungal infections is an efficient conditioner providing effective protection for the skin mucus (eg **amtra care** with Polyvidon). Additional protection can be provided by filtration over **amtra spezial torfgranulat**, as the humins released, combined with the numerous other trace substances contained in this granulated peat, will limit the development of skin fungus.



## Symptom 5:

### White spots on the skin.



The initial stages of white spot disease in a striped plec (*Peckoltia pulcher*) (above), visible as white spots on the upper margin of the caudal fin. Heavy infection of *Ichthyophthirius multifiliis* in a juvenile *Crenicichla marmorata* (below).

**Clinical picture:** If the fish are seen to huddle together in a corner of the aquarium, or to swim around the tank with twitching movements, and they are obviously feeling unwell, then on closer examination it is often possible to see tiny pinhead-sized spots on the fins and skin.

**Cause:** The white spots are individual specimens of the unicellular parasite *Ichthyophthirius multifiliis*, which have bored into the skin and encysted there. This disease is known as white spot, after the typical symptom, and can be fatal if the parasites are permitted to multiply.

**Treatment:** It is absolutely essential to begin treatment as soon as the disease is diagnosed, as *Ichthyophthirius multifiliis* can wipe out the entire population of an aquarium in a very short time. Treatment is with **amtra medic 1**, which should be administered, following the dosage information given in the Instructions for use, until no more little white spots can be seen on the skin.

**Prevention:** Because *Ichthyophthirius multifiliis* is an extremely virulent, and hence particularly dangerous, parasite, it is essential to avoid all contact between the fishes and this pathogen. For this reason newly-purchased fishes should always be painstakingly checked for white spots. In addition, new fishes should if possible be kept in a separate quarantine tank for several days and observed closely, before they are introduced into the main aquarium.



## Symptom 6:

Emaciation, white faeces, and hole-in-head disease.



Advanced hole-in-head disease in a *Crenicichla* sp. "Xingu" (above). Wild-caught green discus (*Symphysodon aequifasciatus aequifasciatus*) (below), emaciated as a result of a massive attack by *Hexamita*.

**Clinical picture:** The various cichlid species in particular are prone to illnesses where single specimens feed less well, lose condition, and become emaciated. On closer inspection the faeces are sometimes seen to be white and hang from the anus in "strings". Sometimes pitted holes appear in the skin above the eyes, extending into the tissue below.

**Cause:** The main causes of this disease syndrome are as a rule unicellular parasites of the flagellate group, in particular *Hexamita*, but also *Cryptobia* and *Protoopalina* (which primarily parasitises discus). These parasites are found in the gut, and in particularly severe cases in the liver and spleen as well. The holes that appear during hole-in-head disease are usually diagnosed as being caused by *Hexamita*.

**Treatment:** Prompt treatment with **amtra medic 5** can prevent the parasites from spreading from the gut to the liver and spleen, and hence avoid the associated severe progressive wasting and emaciation. Hole-in-head disease, in which the flagellates are only one of a number of causes, should also be treated with **amtra medic 5** but in combination with mineral-rich food (eg **amtra sano basic**).

**Prevention:** Intestinal flagellates will find an environment suitable for uncontrolled proliferation only when the normal intestinal flora has been compromised. The commonest cause of this is unsuitable and indigestible food. Regular feeding with the mineral-rich and easily digestible natural food materials contained in **amtra sano** can largely prevent *Hexamita* infection. Even in the case of a pre-existing infection the progress of the disease can be significantly and positively influenced by appropriate feeding.



## Prevention is the best medicine.

There are many different reasons why ornamental fishes become ill. Often these causes are linked and have a reciprocal effect on each other. They include stressors such as unsuitable water parameters, toxins in the water, genetic defects, errors in maintenance (such as a monotonous or unsuitable diet), and, of course, the presence of potentially pathogenic organisms.

As a rule, however, fishes do not become unwell unless pathogens are able to multiply out of hand on the skin and/or gills or in the internal organs. And this is possible only where unsuitable conditions – so-called stressors – have affected the immune system of the fish. Additional dangerous stressors include pH collapse, an unsuitable social structure in the aquarium, and equipment failure (eg defective filters or heaters). Under such circumstances pathogens can multiply explosively and very quickly come to represent a serious threat to the health, and even the lives, of the fishes.

Diseases in ornamental fishes can be treated successfully only if the causes of stress are removed in addition to combating the pathogen responsible with an appropriate medication. Because outbreaks of disease in ornamental fishes are generally the result of unsuitable water conditions, it is important to pay special attention to conditioning the water, for example using **amtra care**, **amtra spezial torfgranulat**, and/or **amtra ultra carbon**. In addition the metabolic wastes deriving from both fishes and plants must be biologically processed before they pollute the water excessively – for example by the addition of **amtra clean**.

No less important is the provision of water parameters that are as natural as possible for the fishes concerned, using products such as **amtra eichenextrakt**, **amtra trop**, **amtra ph-constant**, and **amtra kh-aktiv**. In general, optimal water parameters are not only extremely important for prophylaxis, but are also absolutely essential in the event of disease occurring, as fishes can recover completely only if their environment is near-perfect.

In the event of disease occurring the diet of the fishes should also be considered particularly critically, especially as the quality of the food has an immediate effect on the function of the liver – and hence on the effective basis of the entire immune system of the fish. It is a sad fact that even today there are still huge deficiencies in the field of ornamental fish nutrition, as evidenced by the very large number of fishes found to have severe fatty

degeneration of the liver during veterinary post-mortem. Responsible aquarists should therefore endeavour to offer their fishes a diet as close as possible to that enjoyed in nature, for example carefully-prepared deep-frozen foods such as **amtra frost** and **amtra sano**.

Last but not least there are a few other essential products which will encourage and maintain good health in your fishes in a natural manner. Additional tips on this subject will be found in the earlier sections on the various diseases, in the recommendations regarding the provision of healthy water parameters:



**amtra clean**  
**Activates biological self-purification of the water**, by enriching it with beneficial micro-organisms. Saves up to 50% on water changes.



**amtra pH-constant**  
**Stabilises the pH, even with high population densities and heavy feeding.** Also suitable for reverse-osmosis and de-ionised water.



**amtra care**  
**Transforms the mains supply into water safe for the aquarium.** And protects the gills and mucus coating via natural protective colloids.



**amtra kh-aktiv**  
**Increases the carbonate hardness (KH) for hardwater ornamental fishes.** Provides an effective safeguard against falls in pH, which might otherwise seriously endanger the occupants of the aquarium.



**amtra eichenextrakt**  
**Lowers the pH for softwater ornamental fishes.** And in addition stabilises skin function and counters "dark coloration syndrome" in discus.



**amtra ultra carbon**  
**Highly effective activated carbon for freshwater and marine aquaria.** This filter material optimally binds up heavy metals and other pollutants, and offers the best results as regards removing discoloration and medication residues.



**amtra trop**  
**Lowers hardness (GH) for softwater ornamental fishes.** Prevents dangerous drops in pH. Combines well with **amtra eichenextrakt**.



**amtra spezial torfgranulat**  
**For creating tropical blackwater conditions in fresh water.** Natural black peat concentrate with humins and valuable trace elements.

# Food from Mother Nature.



**amtra sano** is a premium deep-frozen food concept designed to provide for all species. The valuable nutrients it contains are optimally preserved during manufacture using the CRYOVAC quick-freezing process. A top-quality near-natural diet of this type is the best way of preventing disease. And the easiest.

The **amtra system** for greater aquarium enjoyment comprises carefully developed, scientifically tested, and optimally matched products, with whose aid you can easily, conveniently, and above all confidently create ideal living conditions for your fishes and plants.

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