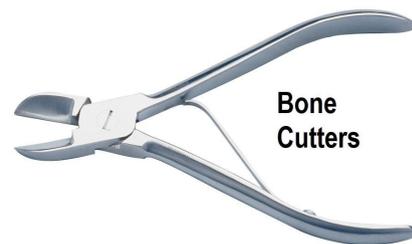


Koi First Aid Kit & Useful Equipment

This article comprises of a list of essential pieces of equipment that you may find you need one day when dealing with a sick or injured fish. Koi's Law states that when you have an issue it is nearly always on an evening, a Sunday or a bank holiday when nowhere is open to get the one thing you need.

Tools & Equipment

Bone Cutters. Do what they say on the tin. Used for cutting cleanly through thick rays of fins and bone.



Sharp Strong Surgical Scissors. Used for cutting through the finer tissues, scales and rays. Useful for cutting away dead tissue around the edge of a wound. Available in a variety of sizes. I recommend you have the fine "iris scissors" as well as the broader type.

Forceps/Tweezers. Good for holding onto skin and scales for removal. Holding open pockets of skin where scales were allowing you to thoroughly clean inside. Also to be used to remove larger parasites from the fish, especially if in the mouth or gills.



Small medicine pots. You usually get these supplied with liquid treatments. Don't throw them away as they are great for putting small amounts of chemicals in such as HP, PP, MG and Acriflavine in when you are treating a fish.

Bowl. Used for inspecting and sedating your koi. Use a jug to measure out the right amount of water and sedation. Rectangular ones are usually used for measuring and photographing koi.





Gauze. For cleaning wounds. Gauze does not leave fibres behind like cotton wool which can trap bacteria.

Kitchen paper can also be used if you don't have gauze. Just make sure none is left stuck to the skin.

Cotton Buds. Good for getting right into the cavity of scale pockets and wounds when cleaning. Also can be used to apply treatments to specific areas on a koi.



Gloves. Always ensure your own health and safety when treating fish and using chemicals. Chemicals are harmful and some are carcinogenic (cancer causing agents), they can also stain your skin and clothing. It is also a good idea to wear eye protection, it is not uncommon for a sedated koi to wake up and start thrashing around on the table.

Towels x2. For putting under & over koi. Soak both towels in the pond water and squeeze out the excess. Use a larger towel folded over a number of times to provide a softer surface to lay the fish on, you can also use it to help position the fish correctly. Use the second towel to cover the head and tail, gently tuck it under the fish, this can help stop the koi flapping about if it suddenly wakes up.



Scales. Important when measuring out treatments. A small set that measures in Micrograms and Grams is essential for measuring out powders such as Potassium Permanganate (PP), Malachite Green (MG) crystals, Acriflavine powder and occasionally Chloramine T (CT). The larger scales are good

for measuring liquids, larger doses of powders and clays, they usually have options for Litres, Millilitres, Kilograms and Grams.

Small artists brushes. Small soft bristles are best, you can use these to paint treatments onto a larger area. Dont use with PP as it will dissolve and damage the bristles. Ensure any loose hairs are removed and that you soak them in disinfectant prior to each use.



Measuring Jug. Use for measuring out treatments (preferably using scales for accuracy), or for soaking your tools in disinfectant prior to use. I find it handy having a range of sizes to hand.

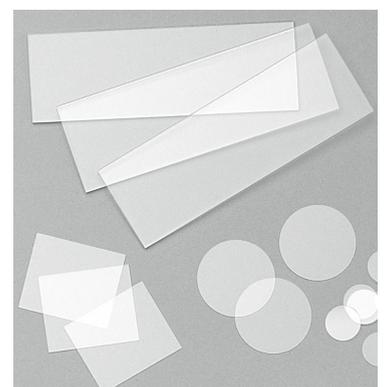
Syringes. These are great for flushing out scale pockets with disinfectant or iodine, this works even better if you can use a blunt fill needle to get a bit more force behind the jet of liquid you happen to be using. Also great for measuring out liquids and when doing water tests.



Microscope. Every koi keeper should have one of these and learn how to use it. A good scope is the Apex Practitioner which has one eyepiece, or the Apex Researcher has binocular eyepieces but is more expensive. If you find a scope you want to get make sure it has a mechanical stage. This allows you to smoothly scan an entire slide. Make sure it also has a built in light. You will need lenses of x4, x10, x40 and x100 with the eyepiece of x10 or x20. This will give you a magnification range of x40 to

x2000. The smallest of parasites (Costia) can be seen at x400 so this is the maximum strength you would need.

Slides & Cover slips. Essential for examining skin mucous scrapes. A coverslip placed on top of the sample on the slide makes examination much easier. Scan the whole sample starting at the lowest magnification up to the highest.





Surgical blades and handle. Not always necessary but handy to have just in case. Ensure you have the correct fitting blades that go with the handle. Pliers can be used to attach and remove the blade. Ensure you change the blade and have a fresh one for each use. The handles can be reused. Dispose of used blades safely.

Net. This is an essential piece of equipment if you ever need to catch your koi. There are various types and sizes available. Make sure you get one that is fit for your needs and that the koi will fit into it. Extendable handles and interchangeable net heads are also available.



Koi Sock. Allows you to safely transfer you caught koi from the net to a bowl and back again without injury. Available in different sizes, handle length and waterproof types.

Butterfly Probe. Not essential but can be handy on lifting scales and opening up larger scale pockets.



Magnifying Glass. Very useful if you are doing delicate work like looking into the gills for parasites or if your koi has any unusual marks on it and you need a better look.

Head Light. For those times when light is poor, it may be raining or getting dark and you need your hands free to deal with the issue. Many are rechargeable so no need to worry about batteries not fitting or being dead.



Chemicals & Medications

When it comes to chemicals and medications, always read the packaging/instructions prior to usage. If adding anything to the pond always get your dosage right by knowing the exact volume of your pond with filters. Many treatments require UV's to be turned off, this is because some chemical become toxic when exposed to UV light, or it breaks them down rendering them ineffective. Check parameters before use. Monitor your koi during treatment.



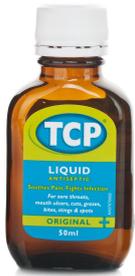
Sedation - Kusuri Masuizai. This is excellent for sedating your koi before doing any procedures on it. Add a measured amount to the water in a measuring bowl and mix well. Never leave you koi unattended, constant observation is required at all times. It does not work at temperatures below 14C. In lower temperatures the sedation will not mix and simply pools on the bottom of the bowl. Euthanasia: A double dose may be used when a koi needs to have its life ended. Leave it in the bowl for a number of hours to ensure efficacy. Other brands are also available.

Tamodine/Iodine/Povidine. There are various brands of Iodine, used for cleaning and disinfecting wounds. Can be used as a base for the orahesive powder to stick to. It is a brown coloured liquid which can stain surfaces and clothing.



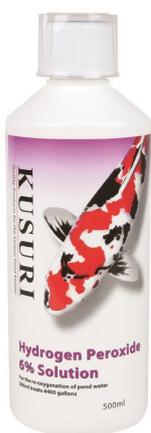
Anti-Bac. Another type of iodine made by Kusuri. It comes as part of the Kusuri ulcer treatment kit and includes a spray bottle for ease of application. Again as it is iodine it is a brown coloured liquid. Can be used on raised scales, ulcers, damaged areas, good for killing pathogenic bacteria. Avoid contact with eyes and gills. It contains Ethanol, Methanol and Polyvinylpyrrolidone Iodine as active ingredients.

Roccal cleanser. Is another Kusuri branded topical cleansing agent. It can be used on damaged areas and fins. Avoid contact with gills and eyes. This comes as part of the ulcer care kit mentioned previously. It can be used to disinfect surgical tools prior to use. It contains Benzylkonium Chloride 0.2% as the active ingredient.



TCP. A good all round disinfectant for cleaning wounds and sterilising equipment. To disinfect equipment pour a shot glass amount into a small jug with boiling water. Put the tools in the water with any blades open and pointing down. Ideally do this first so that it allows time to cool down in time for you to use them. You could also use on any wounds being careful not to get it into the gills or eyes of the fish.

Acriflavine. Available in liquid and powder forms. Is usually used for the treatment certain parasites, fungus and bacterial problems. It doesn't seem to be used as much as other chemicals in recent years. Can be used with good effect with salt. If you have a koi with wounds that can be quarantined then this is a good treatment to use with salt and heat (providing no parasites are found on scrapes). As it has antibacterial properties it can be applied to wounds or damaged fins.



Hydrogen Peroxide (HP). Available in different strengths and by various brands but we usually get 6%. It has a number of uses: for neutralising PP, for adding oxygen into poorly oxygenated ponds and for cauterising bleeding wounds. For cauterising a bleeding wound apply a small amount of HP to the affected area using a cotton bud. The area will fizz and produce a white/pink foam. A number of applications may be required. When bleeding has stopped rinse the area with fresh water.

Potassium Permanganate (PP). Usually comes in a dark purple crystal/powder form. Some premixed liquids are available. This is another chemical that has a number of uses; treatment of certain parasites, for cleaning equipment and stripping

manufacturing residue from medias, as a concentrated bath, as a rinse to help treat mouth rot and can also be used as a cauterising agent to stop bleeding. To stop bleeding mix a small amount in a medicine pot with fresh water to form a paste, using a cotton bud apply a small amount of the paste to the bleeding area and leave for a minute or two. Rinse the areas with fresh tap water and repeat if necessary.



Propolis. This is a natural product made by Bee's. It contains antibiotic and antimicrobial properties so is great for the use on wounds. It is unique in the way that it works. Apply to a thoroughly cleaned and dried wound. Spread the propolis evenly all over the affected area so it forms a reasonably thin layer. It comes out as a brown thick liquid but on contact with water it becomes insoluble and forms a waxy seal. This prevents dirt and bacteria getting into the area.

Orahesive Powder. A superior covering, which adheres to the mucous membranes and open wounds. It is perfect for use on ulcers and minor wounds. The powder adheres to mucous membranes in open wounds. After thoroughly cleaning the wound, apply antibac or propolis then sprinkle the powder over the top. Ensure even coverage and blow off any excess powder being careful to avoid the eyes and gills.



Top Coat Sealer. This is a liquid sealer with anti-bacterial properties. It can be used independently or as an additional covering over the top of Kusuri Orahesive Powder. Use as a final coating over treated wounds and split fins. Ensure the area is allowed to dry for a minute or two. Once it is no longer tacky the fish can be gently recovered in the pond over an

air stone or in the flow of water. The wound dressings may only last for a few days so further treatments may be required.

Malachite Green (MG). Is an organic compound traditionally used as a dye. It has antifungal, antibacterial, antiparasitic and antimicrobial properties. It is however a carcinogenic chemical meaning it can cause cancer. It works well used together with Formalin. It can be painted onto wounds as a topical solution. It is easily available as liquid but may be found in powder form. It will stain skin and clothing so always wear protective equipment when using.



Formalin. Usually only used alongside MG to treat certain parasite problems. It works by dehydrating and deactivating cells. Can be used as a dip in serious cases. It is also known as Formaldehyde which is used in the embalming of dead bodies. In its original Formaldehyde is a actually gas which is a naturally occurring organic compound. It is a clear liquid which can be easily mistaken for other clear liquids. Always measure this out first into a clear jug to allow you to check for crystals that may have formed. It has disinfectant properties. There are certain doses depending on the water temperatures. Not to be used below 10C, also do not use if there is salt in the pond. It is toxic if inhaled, use in well ventilated areas. It can cause burns to skin.

Sodium Thiosulphate (ST). Also known as Dechlorinator. It comes in crystal form. Easily dissolved in warm water or you can just sprinkle a teaspoon full into your biological filter when water movement is good. Its by product is ammonia which is quickly broken down by your filter. It is very difficult to overdose on this in a pond. Easily available to buy online at a relatively cheap price when compared to pre mixed liquid dechlorinators. Always buy the “Food Grade” type.





Chloramine T (CT). Is a white crystal like powder that requires dissolving in water. Can be used for the treatment of certain parasites. Great for lowering the bacterial count in a pond and for cleaning equipment. The downside is that it does not discriminate good from bad bacteria so expect your filters to take a bit of a knock when using this. Can help with healing of wounds or raised scales in koi. Is toxic if used when a UV is turned on. Not to be used in temperatures under 10C or if other species of fish are in the pond. There are other additives available that work in a similar way, helping to reduce the bacterial load in a pond. These are **Virkon** and **Envirex**.

Koi Clear Gel. This is a relatively new product available for wound care. It is a clear gel of a similar texture to vaseline. The unique thing about it is that it contains Ozone which is excellent for killing bacteria, fungi and viruses. It is made of vegetable oils. All you need to do it thoroughly clean the wound, dry it and apply a good amount of the gel to the wound. It promotes quick healing and tackles bacteria.

