

Good Practice Guide for Immersion Vaccination of Fish

Immersion vaccination was the first vaccination method to be used for protecting trout in the late 1970's. It is the method of choice when large numbers of small fish need to be vaccinated at the same time.

The method involves diluting the vaccine in clean hatchery water and fully immersing the fish in the resulting vaccine solution. The objective is to ensure that each fish is exposed to the suspended antigen in sufficient concentration and for sufficient time to allow the antigens to be absorbed by the fish and induce a protective immune response.

The success of this method depends upon the solution being correctly prepared, the fish being in good health and particularly that their gills are clean and in good condition. The main site of uptake of antigen is through the gills.

The level and duration of protection afforded by the vaccine depends upon the size of the fish, the temperature of the water and the health status of the fish at the time of the vaccination. The exact details and effects of these parameters will vary with each vaccine being used and species of fish being vaccinated, therefore the detailed guidance on the label should be followed in each case.

The key reasons for using an immersion vaccine are:

- Cost effective protection of small fish that can be easily handled.
- Need to simultaneously vaccinate a large number of small fish.
- Low stress to fish and farm staff.

This guide is designed to advise the best practice for using immersion vaccines in general terms. For detailed vaccination instructions, please consult the applicable product labelling.

Guiding Principles

1. Follow the label instructions for the vaccine being used.
2. Only vaccinate healthy fish.
3. Observe the correct dosage recommendation.
4. Observe the correct immersion time.
5. Ensure the conditions in the vaccine solution are appropriate for the fish. The solution should be well oxygenated, at the correct temperature and clean. The fish should not be stressed by the handling or vaccination procedure.
6. Allow adequate time for immunity to develop before exposing the fish to the disease (14 - 21) days.

1. PREPARING AND SELECTING FISH FOR IMMERSION VACCINATION.

Time

- The time to vaccinate will be determined by the expected time of first exposure to the disease (i.e. movement from hatchery to ongrowing site), size of the fish and water temperature.
- In order to respond well to vaccination and to ensure that the vaccination procedures do not precipitate additional disease or husbandry problems, the condition and health of the fish must be good.
- Immersion vaccines are taken up through the gills. Therefore, these must be in good condition. If there are any signs or symptoms of gill disease or adverse environmental conditions, immersion vaccination should not be carried out.
- The fish must not be suffering from disease. If present these must be treated prior to vaccination.
- Fish should be graded and batched prior to vaccination to ensure optimum use of the vaccine solution and to reduce the stress of the handling process associated with immersion vaccination.

Withholding Feed

As with any handling procedure feed should be withheld from fish for sufficient time to empty the gut prior to vaccination. This is both to reduce the level of stress associated with the procedure and also to avoid fouling of the vaccination solution, which results in a build up of toxic waste material and ammonia that can cause acute stress and damage to the fish.

II. PREPARATION OF EQUIPMENT

Immersion Vaccination Equipment Required

- Vaccination tank for vaccine solution (1 liter of vaccine and 9 liters of water) – designed to optimize the volume/surface area ratio.
- Knotless net or strainer basket for de-watering fish.
- Scales and weighing system.
- Stop watch.
- Vaccination record sheet.

III. PREPARATION OF THE VACCINE SOLUTION

Follow the detailed instructions for the specific vaccine being used.

For example several AquaVac® immersion vaccines are designed to treat 100 kg of fish and to be diluted 1:10 with hatchery water. However AquaVac live attenuated vaccines are designed to be delivered to small catfish fry and are administered at different dilutions and dose rates.

Use 1 liter AquaVac® immersion vaccine per 100kg fish to be vaccinated. [If a greater weight of fish are to be vaccinated more than 1 liter of vaccine can be used at a time e.g. 300kg fish = 3 liters vaccine + 27 liters water].

1. Shake vaccine well to ensure all of the antigen is evenly distributed throughout the bottle.
2. Measure out the required volume of clean hatchery water per volume of vaccine to be diluted.
3. Add vaccine to water and mix well.
4. Oxygenate lightly to maintain good saturation. Avoid super saturation. Ensure that the temperature of the vaccine solution does not vary by more than +/- 2 °C from the holding water the fish are coming from and being returned to.

IV. VACCINATION PROCEDURE

1. Place vaccination tank on scales and tare to zero.
2. Drain a netful of fish.
3. Immerse fish in the vaccine solution for the prescribed time period.
Ensure that:
 - Fish are not overcrowded.
 - Solution circulates around fish.
 - Fish are able to breathe freely.
4. Note weight of fish vaccinated.
5. Drain fish carefully maintaining the vaccine solution in the vaccination tank.
6. Return vaccinated fish to holding tank.
7. Repeat process until the maximum allowable weight of fish has been vaccinated.

PRECAUTIONS

- AquaVac immersion vaccines are proven to be safe as part of the release process. The handling procedures can cause harm if not carefully implemented.
- Fish should not show any signs of distress during or after the vaccination procedure. If they do, stop vaccinating and resolve the problem.
- Minimize the time out of water to reduce stress.
- Ensure that no scale or skin damage is caused by the equipment or handling procedures.
- Allow 14 - 21 days for immunity to build up following vaccination [Booster vaccination using AquaVac oral vaccines or AquaVac injection vaccines is recommended 3-6 months after primary vaccination.].

NOTE: Specific product details of indications, registration license status, and trademarks, etc. may vary from country to country. Users should check the license status, local label and/or data sheet for exact specifications of usage or contact their local Intervet/Schering-Plough Animal Health representative.

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