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Infectious Pancreatic Necrosis Vaccine (Inactivated, Oil-adjuvanted, Injectable) for Salmonids

General Notices

(Ph. Eur. monograph 3063)

Ph Eur

1 DEFINITION

Infectious pancreatic necrosis (IPN) vaccine (inactivated, oil-adjuvanted, injectable) for salmonids is prepared from cultures of a suitable strain of infectious pancreatic necrosis virus, inactivated while maintaining adequate immunogenic properties. This monograph applies to vaccines intended for administration by injection for the active immunisation of salmonids against IPN.

2 PRODUCTION

2-1 PREPARATION OF THE VACCINE

The vaccine virus is grown in cell cultures. The harvest is inactivated by a suitable method. The virus suspension may be purified and/or concentrated. The vaccine contains an oily adjuvant.

2-2 SUBSTRATE FOR VIRUS PROPAGATION

2-2-1 Cell cultures

The cell cultures comply with the requirements for cell cultures for production of veterinary vaccines (*5.2.4*).

2-3 CHOICE OF VACCINE COMPOSITION

The strain included in the vaccine is shown to be suitable with respect to the production of antigens of protective importance. The vaccine is shown to be satisfactory with respect to safety (*5.2.6*) and efficacy (*5.2.7*) in the species of fish for which it is intended. The following tests for safety (section 2-3-1) and immunogenicity (section 2-3-2) may be used during the demonstration of safety and efficacy.

2-3-1 Safety

2-3-1-1 Laboratory test. Carry out the test in each species of fish for which the vaccine is intended. The average body mass of the fish corresponds to the minimum body mass to be recommended for vaccination. Use a batch of vaccine containing not less than the maximum potency or maximum antigen content that may be expected in a batch of vaccine.

Use not fewer than 50 fish from a population that does not have specific antibodies against IPN virus and has not been vaccinated against IPN or exposed to IPN virus. The test is carried out under the conditions to be recommended for use of the vaccine with a water temperature not less than 10 °C. Administer to each fish by the intraperitoneal route 1 dose of the vaccine. Observe the fish at least daily for 21 days.

The test is not valid if more than 6 per cent of the fish die from causes not attributable to the vaccine. The vaccine complies with the test if no fish shows abnormal local or systemic reactions or dies from causes attributable to the vaccine.

2-3-1-2 Field studies. Safety is also demonstrated in field trials by administering the intended dose to a sufficient number of fish in not fewer than 2 sets of premises. Samples of 30 fish are taken on 3 occasions (after vaccination, at the middle of the rearing period and at slaughter) and examined for local reactions in the body cavity. Moderate lesions involving localised adhesions between viscera or between viscera and the abdominal wall and slight opaqueness and/or sparse pigmentation of the peritoneum are acceptable. Extensive lesions including adhesions between greater parts of the abdominal organs, massive pigmentation and/or obvious thickening and opaqueness of greater areas of the peritoneum are unacceptable if they occur in more than 10 per cent of the fish in any sample. Such lesions include adhesions that give the viscera a ‘one-unit' appearance and/or lead to manifest laceration of the peritoneum following evisceration.

2-3-2 Immunogenicity

Carry out the test according to a protocol defining limits of body mass for the fish, water source, water flow and temperature limits, and preparation of a standardised challenge. A test is carried out after intraperitoneal administration of the vaccine. The vaccine administered to each fish is of minimum potency or minimum antigen content.

Use for the test not fewer than 60 fish from a population that does not have specific antibodies against IPN virus and has not been vaccinated against IPN or exposed to IPN virus. The average body mass of the fish corresponds to the minimum body mass to be recommended for vaccination. Vaccinate not fewer than 30 fish according to the instructions for use. Perform mock vaccination on a control group of not fewer than 30 fish (negative controls); mark vaccinated and negative-control fish for identification. Keep all the fish in the same tank or mix equal numbers of negative controls and vaccinates in each tank if more than 1 tank is used. Challenge each fish at a fixed interval after vaccination, corresponding to the onset of immunity claimed, by a suitable route, with a sufficient quantity of IPN virus of which the virulence has been verified. Cohabitation challenge may be used, whereby shedder fish are injected with a virulent IPN virus strain in order to obtain viral shedding fish that will induce mortality in susceptible cohabiting fish. Add the shedder fish to the tank(s) and observe the fish at least daily until the end of mortality is reached in the control group (determined as the point in time when no negative-control fish have died over a period of 2 consecutive days). If co-habitation challenge is used, the shedder fish are added to the tank(s) at an appropriate ratio to the susceptible cohabiting fish to permit a valid challenge. Shedder and cohabiting fish are marked for individual or group identification.

The test is not valid if the specific mortality is less than 50 per cent in the control group. Calculate the relative percentage survival (RPS) using the following expression:

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V	=	percentage of mortality in vaccinated fish;
C	=	percentage of mortality in negative-control fish.

The vaccine complies with the test if the RPS is not less than 50 per cent at 50 per cent control mortality.

2-4 MANUFACTURER'S TESTS

2-4-1 Batch potency test

It is not necessary to carry out the potency test (section 3-3) for each batch of vaccine if it has been carried out using a batch of vaccine with a minimum potency. Where the test is not carried out, an alternative validated method may be used, the criteria for acceptance being set with reference to a batch of vaccine that has given satisfactory results in the test described under Potency. The test for antigen content (section 2-4-1-1) together with the test for adjuvant (section 2-4-1-2) may be carried out.

2-4-1-1 Antigen content. The quantity of virus antigen per dose is determined by a suitable immunochemical method (2.7.1), which can include but is not limited to an enzyme-linked immunosorbent assay (ELISA) test for aqueous antigen

content of a split emulsion. The antigen content is not significantly lower than that found for a batch that has given satisfactory results in the test described under Immunogenicity (section 2-3-2).

2-4-1-2 Adjuvant. If the immunochemical assay (section 2-4-1-1) is performed, the adjuvant is tested, in accordance with the monograph *Vaccines for veterinary use (0062)*, by suitable physical and chemical methods. If the adjuvant cannot be adequately characterised, the antigen content determination cannot be used as the batch potency test.

3 BATCH TESTS

3-1 Identification

The vaccine contains the antigen or antigens stated under Definition.

3-2 Bacteria and fungi

The vaccine, including where applicable the diluent supplied for reconstitution, complies with the test for sterility prescribed in the monograph *Vaccines for veterinary use (0062)*.

3-3 Potency

The vaccine complies with the requirements of the test mentioned under Immunogenicity (section 2-3-2) when administered by the recommended route and method.

4 LABELLING

The label states information on the time needed for development of immunity after vaccination under the range of conditions corresponding to the recommended use.