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Infectious Avian Encephalomyelitis Vaccine, Living

General Notices

Epidemic Tremor Vaccine, Living

(Avian Infectious Encephalomyelitis Vaccine (Live), Ph. Eur. monograph 0588)

Ph Eur

1 DEFINITION

Avian infectious encephalomyelitis vaccine (live) is a preparation of a suitable strain of avian encephalomyelitis virus. This monograph applies to vaccines intended for administration to non-laying breeder chickens to protect passively their future progeny and/or to prevent vertical transmission of virus via the egg.

2 PRODUCTION

2-1 PREPARATION OF THE VACCINE

The vaccine virus is grown in embryonated hens' eggs or in cell cultures.

2-2 SUBSTRATE FOR VIRUS PROPAGATION

2-2-1 Embryonated hens' eggs

If the vaccine virus is grown in embryonated hens' eggs, they are obtained from flocks free from specified pathogens (SPF) (*5.2.2*).

2-2-2 Cell cultures

If the vaccine virus is grown in cell cultures, they comply with the requirements for cell cultures for the production of vaccines for veterinary use (*5.2.4*).

2-3 CHOICE OF VACCINE VIRUS

The vaccine virus shall be shown to be satisfactory with respect to safety (*5.2.6*) and efficacy (*5.2.7*) for the chickens for which it is intended.

The following tests for safety (section 2-3-1), increase in virulence (section 2-3-2) and immunogenicity (section 2-3-3) may be used during the demonstration of safety and efficacy.

2-3-1 Safety

Carry out the test for each route and method of administration to be recommended for vaccination using in each case non-laying breeder chickens not older than the minimum age to be recommended for vaccination. Use vaccine virus at the least attenuated passage level that will be present in a batch of the vaccine.

For each test, use not fewer than 8 chickens from an SPF flock (*5.2.2*). Administer to each chicken a quantity of the vaccine virus equivalent to not less than 10 times the maximum virus titre likely to be contained in 1 dose of the vaccine. Observe the chickens at least daily for 21 days.

The test is not valid if non-specific mortality occurs.

The vaccine virus complies with the test if no chicken shows abnormal signs of disease or dies from causes attributable to the vaccine virus.

2-3-2 Increase in virulence

Carry out the test according to general chapter *5.2.6* using 1-day-old chickens from an SPF flock (*5.2.2*). If the properties of the vaccine virus allow sequential passage through 5 groups via natural spreading, this method may be used, otherwise passage as described below is carried out.

Administer to each chicken of the 1st group by a route and method to be recommended a quantity of the vaccine virus that will allow recovery of virus for the passages described below. 5-7 days later, prepare a suspension from the brain of each chicken and pool these samples. Administer a suitable volume of the pooled samples by the oral route to each chicken of the next group. Carry out this passage operation not fewer than 4 times; verify the presence of the virus at each passage. If the virus is not found at a passage level, repeat the passage by administration to a group of 10 chickens.

If the 5th group of chickens shows no evidence of an increase in virulence indicative of reversion during the observation period, further testing is not required. Otherwise, carry out an additional safety test and compare the clinical signs and any relevant parameters in a group of at least 10 chickens receiving the material used for the 1st passage and another similar group receiving the virus at the final passage level.

The vaccine virus complies with the test if no indication of an increase in virulence of the virus recovered for the final passage compared with the material used for the 1st passage is observed. If virus is not recovered after an initial passage in 5 chickens and a subsequent repeat passage in 10 chickens, the vaccine virus also complies with the test.

2-3-3 Immunogenicity

If the vaccine is recommended for passive protection of future progeny carry out test 2-3-3-1. If the vaccine is recommended for prevention of vertical transmission of virus via the egg, carry out test 2-3-3-2. A test is carried out for each route and method of administration to be recommended, using in each case chickens from an SPF flock (*5.2.2*) not older than the minimum age to be recommended for vaccination. The quantity of the vaccine virus administered to each chicken is not greater than the minimum titre to be stated on the label and the virus is at the most attenuated passage level that will be present in a batch of the vaccine.

2-3-3-1 Passive immunity in chickens. Vaccinate not fewer than 20 breeder chickens from an SPF flock (*5.2.2*). Maintain separately not fewer than 10 breeder chickens of the same age and origin as controls. At the peak of lay, hatch not fewer than 25 chickens from eggs from vaccinated breeder chickens and 10 chickens from non-vaccinated breeder chickens. At 2 weeks of age, challenge each chicken by the intracerebral route with a sufficient quantity of virulent avian encephalomyelitis virus. Observe the chickens at least daily for 21 days after challenge. Record the deaths and the number of surviving chickens that show clinical signs of disease. Birds displaying severe clinical signs of avian infectious encephalomyelitis are euthanised to avoid unnecessary suffering.

The test is not valid if:

— during the observation period after challenge fewer than 80 per cent of the control chickens die or show severe clinical signs of avian infectious encephalomyelitis;

— and/or during the period between the vaccination and challenge more than 15 per cent of control or vaccinated chickens show abnormal clinical signs or die from causes not attributable to the vaccine.

The vaccine virus complies with the test if during the observation period after challenge not fewer than 80 per cent of the progeny of vaccinated chickens survive and show no notable clinical signs of disease.

2-3-3-2 Passive immunity in embryos. Vaccinate not fewer than 20 breeder chickens from an SPF flock (5.2.2). Maintain separately not fewer than 10 breeder chickens of the same age and origin as controls. At the peak of lay, incubate not fewer than 36 eggs from the 2 groups, vaccinated and controls, and carry out an embryo sensitivity test. On the sixth day of incubation inoculate 100 EID_{50} of the Van Roekel strain of avian encephalomyelitis virus into the yolk sacs of the eggs.

12 days after inoculation examine the embryos for specific lesions of avian encephalomyelitis (muscular atrophy). Deaths during the first 24 h are considered to be non-specific.

The test is not valid if fewer than 80 per cent of the control embryos show lesions of avian encephalomyelitis. The test is not valid if fewer than 80 per cent of the embryos can be given an assessment.

The vaccine virus complies with the test if not fewer than 80 per cent of the embryos in the vaccinated group show no lesions of avian encephalomyelitis.

3 BATCH TESTS

3-1 Identification

The vaccine, diluted if necessary, is identified using a suitable method. For example, when mixed with a monospecific avian encephalomyelitis virus antiserum, it is no longer able to infect embryonated hens' eggs from an SPF flock (5.2.2) or susceptible cell cultures (5.2.4) into which it is inoculated.

3-2 Bacteria and fungi

Vaccines intended for administration by injection comply with the test for sterility prescribed in the general monograph *Vaccines for veterinary use (0062)*.

Any diluent supplied for reconstitution of the vaccine complies with the test for sterility prescribed in the general monograph *Vaccines for veterinary use (0062)*.

3-3 Mycoplasmas (2.6.7)

The vaccine complies with the test for mycoplasmas.

3-4 Extraneous agents (5.2.5)

The vaccine is free from extraneous agents.

3-5 Virus titre

Titrate the vaccine virus by inoculation into embryonated hens' eggs from an SPF flock (5.2.2) or into suitable cell cultures (5.2.4). The vaccine complies with the test if 1 dose contains not less than the minimum virus titre stated on the label.

3-6 Potency

Depending on the indications, the vaccine complies with the requirements of 1 or both of the tests prescribed under Immunogenicity (section 2-3-3-1, 2-3-3-2), when administered by a recommended route and method. It is not necessary to carry out the potency test for each batch of the vaccine if it has been carried out on a representative batch using a vaccinating dose containing not more than the minimum virus titre stated on the label.