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Ferret and Mink Distemper Vaccine, Living

General Notices

(Distemper Vaccine (Live) for Mustelids, Ph. Eur. monograph 0449)

Ph Eur

1 DEFINITION

Distemper vaccine (live) for mustelids is a preparation of a suitable strain of distemper virus that is attenuated for ferrets, or for ferrets and minks. This monograph applies to vaccines intended for the active immunisation of ferrets, or ferrets and minks, against disease caused by distemper virus.

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 is shown to be satisfactory with respect to safety (*5.2.6*) and efficacy (*5.2.7*) for the ferrets, or for the ferrets and minks for which it is intended.

The following tests for safety (section 2-3-1) and immunogenicity (section 2-3-3) may be used during the demonstration of safety and efficacy. The tests are performed in each species for which the vaccine is intended.

2-3-1 Safety

Carry out the test for each route and method of administration 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 5 ferrets and/or minks of the minimum age to be recommended for vaccination and that do not have antibodies against distemper virus. Administer to each ferret and/or mink 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 animals at least daily for 42 days.

The vaccine complies with the test if no animal shows abnormal local or systematic reactions, signs of disease or dies from causes attributable to the vaccine.

2-3-2 Increase in virulence

Carry out the test according to general chapter *5.2.6*, using animals of the most susceptible target species. Use animals that do not have antibodies against distemper virus. 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 animal of the 1st group by a route to be recommended a quantity of the vaccine virus that will allow recovery of virus for the passages described below. Administer the virus by the route to be recommended for vaccination most likely to lead to reversion to virulence. After 5-10 days, prepare a suspension from, for example, the nasal mucosa, tonsils, thymus, spleen and the lungs and their local lymph nodes of each animal and pool the samples. Administer 1 mL of the pooled samples by the intranasal route to each animal 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 animals.

If the 5th group of animals 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 8 animals 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 increased 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 2 animals and a subsequent repeat passage in 10 animals, the vaccine virus also complies with the test.

2-3-3 Immunogenicity

A test is carried out for each route and method of administration to be recommended for vaccination using animals of the target species (ferrets and/or minks) for which the vaccine is intended. Use animals not older than the minimum age to be recommended for vaccination. The quantity of the vaccine virus administered to each animal is not greater than the minimum virus 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 vaccine.

Use for the test not fewer than 7 ferrets and/or minks that do not have antibodies against distemper virus. Vaccinate not fewer than 5 animals, according to the schedule to be recommended. Maintain not fewer than 2 animals as controls. Challenge each animal after 20-22 days by the intramuscular route with a quantity of a suspension of virulent distemper virus sufficient to cause the death of a ferret and/or a mink. Observe the animals at least daily for 21 days after challenge. Animals displaying typical signs of serious infection with distemper virus are euthanised to avoid unecessary suffering.

The test is not valid if 1 or both of the control animals do not die of distemper. The vaccine virus complies with the test if the vaccinated animals remain in normal health.

3 BATCH TESTS

3-1 Identification

The vaccine is identified using a suitable method. For example, when mixed with a specific distemper antiserum, it is no longer able to provoke cytopathic effects in susceptible cell cultures or lesions on the chorio-allantoic membranes of fertilised hen eggs 9-11 days old, into which it is inoculated.

3-2 Bacteria and fungi

The vaccine, including where applicable the diluent supplied for reconstitution, 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 in suitable cell cultures or fertilised hens' eggs 9-11 days old. The vaccine complies with the test if one dose contains not less than the minimum virus titre stated on the label.

3-6 Potency

The vaccine complies with the requirements of the test prescribed under Immunogenicity (section 2-3-3) 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.
