TETANUS VACCINE FOR VETERINARY USE

Vaccinum tetani ad usum veterinarium

DEFINITION
Tetanus vaccine for veterinary use is a preparation of the neurotoxin of Clostridium tetani treated in a manner that eliminates toxicity while maintaining adequate immunogenic properties.

PRODUCTION
The C. tetani strain used for production is cultured in a suitable medium. The toxin is purified and then detoxified or it may be detoxified before purification. The antigenic purity is determined in Lf units of tetanus toxoid per milligram of protein and shown to be not less than the value approved for the particular product.

CHOICE OF VACCINE COMPOSITION
The C. tetani strain used in the preparation of the vaccine is shown to be satisfactory with respect to the production of the neurotoxin. The vaccine is shown to be satisfactory with respect to safety and immunogenicity for each species of animal for which it is intended. As part of the studies to demonstrate these characteristics, the tests described below may be used.

Production of antigens. The production of the neurotoxin of C. tetani is verified by a suitable immunochemical method (2.7.1) carried out on the neurotoxin obtained from the vaccine strain under the conditions used for the production of the vaccine.

Safety. Carry out the test for each recommended route of administration and species of animal for which the vaccine is intended; use animals of the minimum age recommended for vaccination and of the most sensitive category for the species.

Use not fewer than 15 animals, free from antitoxic antibodies for each test. Administer a double dose of vaccine to each animal. Administer a single dose of vaccine to each animal after the interval stated on the label. Observe the animals until 14 days after the last administration. If the vaccine is intended for use in pregnant animals, vaccinate the animals at the stage of pregnancy and according to the scheme stated on the label and prolong the observation period until 1 day after parturition. The vaccine complies with the test if no animal shows abnormal local or systemic signs of disease or dies from causes attributable to the neurotoxin of C. tetani.

TESTS

Safety. Inject 5 ml of the vaccine subcutaneously as 2 equal divided doses, at separate sites into each of 5 healthy guinea-pigs, each weighing 350 g to 450 g, that have not previously been treated with any material that will interfere with the test. No abnormal local or systemic reaction occurs. If within 21 days of the injection any of the animals shows signs of or dies from tetanus, the vaccine does not comply with the test. If more than 1 animal dies from non-specific causes, repeat the test. If any animal dies in the second test, the vaccine does not comply with the test.

Sterility. The vaccine complies with the test for sterility prescribed in the monograph on Vaccines for veterinary use (0062).

POTENCY

Administer 1 dose of vaccine subcutaneously to each of at least 5 susceptible guinea-pigs. After 28 days, administer again 1 dose subcutaneously to each guinea-pig. 14 days after the second dose, collect blood from each guinea-pig and prepare serum samples. Determine for each serum the titre of antibodies against the neurotoxin of C. tetani using a suitable immunochemical method (2.7.1) such as a toxin-binding-inhibition test (ToBI test) and a homologous reference serum. Determine the average antibody titre of the serum samples.

Clostridia (multicomponent) rabbit antiserum BRP, Clostridium tetani guinea-pig antiserum for vaccines for veterinary use BRP and Clostridium tetani rabbit antiserum BRP are suitable as reference sera.

Tetanus vaccine intended for use in animals other than horses complies with the test if the average antibody titre is not less than 7.5 IU/ml.

Tetanus vaccine intended for use in horses complies with the test if the average antibody titre is not less than 30 IU/ml.
For tetanus vaccine presented as a combined vaccine for use in animals other than horses, the above test may be carried out in susceptible rabbits instead of guinea-pigs. The vaccine complies with the test if the average antibody titre of the sera of the vaccinated rabbits is not less than 2.5 IU/ml.

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VIBRIOSIS (COLD-WATER) VACCINE (INACTIVATED) FOR SALMONIDS

Vaccinum vibriosidis aquae frigidae inactivatum ad salmonidas

DEFINITION
Cold-water vibriosis vaccine (inactivated) for salmonids is prepared from cultures of one or more suitable strains of Vibrio salmonicida.

PRODUCTION
The strains of V. salmonicida are cultured and harvested separately. The harvests are inactivated by a suitable method. They may be purified and concentrated. Whole or disrupted cells may be used and the vaccine may contain extracellular products of the bacterium released into the growth medium.

CHOICE OF VACCINE COMPOSITION
The strain or strains of V. salmonicida used are shown to be suitable with respect to production of antigens of assumed immunological importance. The vaccine is shown to be satisfactory with respect to safety (5.2.6) and immunogenicity (5.2.7) in the species of fish for which it is intended. The following tests may be used during demonstration of safety and immunogenicity.

Safety. Safety is tested in three different batches using test A, test B or both, depending on the recommendations for use.

A. Vaccines intended for administration by injection.
A test is carried out in each species of fish for which the vaccine is intended. The fish used are from a population that does not have specific antibodies against V. salmonicida and which has not been vaccinated against nor exposed to cold-water vibriosis. The test is carried out in the conditions recommended for the use of the vaccine with a water temperature not less than 10 °C. An amount of vaccine corresponding to twice the recommended dose per mass unit for fish of the minimum body mass recommended for vaccination is administered intraperitoneally to each of not fewer than fifty fish of the minimum recommended body mass. The fish are observed for 21 days. No abnormal local or systemic reaction occurs. The test is invalid if more than 6 per cent of the fish die from causes not attributable to the vaccine.

B. Vaccines intended for administration by immersion.
A test is carried out in each species of fish for which the vaccine is intended. The fish used are from a population that does not have specific antibodies against V. salmonicida and which has not been vaccinated against nor exposed to cold-water vibriosis. The test is carried out in the conditions recommended for the use of the vaccine with a water temperature not less than 10 °C. Prepare an immersion bath at twice the recommended concentration. Not fewer than fifty fish, having not less than the minimum body mass recommended for vaccination are used. The fish are bathed for twice the recommended time. The fish are observed for 21 days. No abnormal local or systemic reaction occurs. The test is invalid if more than 6 per cent of the fish die from causes not attributable to the vaccine.