

Antibody Titers And Sterilizing Immunity

A titer test would be very useful to show that a vaccinated animal responded to the vaccine.

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"Sterilizing Immunity" is the ultimate in vaccine induced protection since it not only prevents clinical disease, but also prevents infection. Only antibody can prevent infection. Sterilizing immunity exists for certain canine diseases. Three of those diseases are the most important diseases. They are canine distemper (CDV), canine parvovirus (CPV-2) and canine infectious hepatitis caused by canine adenovirus-1 (CAV-1).

The test (TiterCHEK® from Synbiotics) would be very useful to show that a vaccinated animal responded to the vaccine. The test would also show that an animal with a positive test has sterilizing immunity, thus should be protected from infection. If that animal were vaccinated it would not respond with a significant increase in antibody titer, but may develop a hypersensitivity to vaccine components (e.g. fetal bovine serum). Furthermore, the animal doesn't need to be revaccinated and should not be revaccinated since the vaccine could cause an adverse reaction (hypersensitivity disorder). You should avoid vaccinating animals that are already protected. It is often said that the antibody level detected is "only a snap shot in time." That's simply not true; it is more a "motion picture that plays for years."

Many veterinary practitioners do not feel comfortable not vaccinating every year without some way to provide information on the immune status of the dog/cat. TiterCHEK can give them that assurance. Dogs that have a

negative result on the test (TiterCHEK) are not protected from infection (no sterilizing immunity) but they may be protected from clinical disease since an anamnestic (secondary) antibody (humoral) and/or cellular response could protect from disease. Therefore, a negative test does not mean the animal would develop disease if exposed. A positive test, however, indicates the animal should be protected from infection and disease.

TiterCHEK would be very useful after the puppy vaccination series to ensure the puppy has responded. If it has not responded after vaccination (sample taken 2 weeks after the last dose), then you will want to revaccinate immediately and test again about two weeks later. If the animal is not positive then you need to consider the dog to be a *low* or *non-responder*. A *non-responder* is likely to get sick and die if infected with CPV-2 or CDV, because it is genetically unable to develop a response to the pathogen. If it is a *low-responder* it may not be able to ever develop and/or maintain an antibody response that provides sterilizing immunity. But it may be protected or not from clinical disease through cellular and/or humoral responses.

Interestingly, even for diseases where sterilizing immunity does not exist (e.g. Lepto, Bordetella, rabies) having a titer would show that the vaccine has stimulated an immune response and the animal may be protected from clinical disease by memory T cells and/or B cells that will

respond if the animal does get infected. This raises another question often asked, "Why isn't there a titer check test for all the other vaccine components?" My answer would be that for the two most important diseases CPV-2 and CDV, antibody plays a key role in protection, thus those two diseases should be included in the test. Rabies vaccination is controlled by law and the vaccine is known to give immunity for at least three years and ICH is no longer a disease of any consequence in North America. Furthermore, it is very rare that if a dog responds to CDV and CPV-2 components in the vaccine that it would not respond to canine adenovirus. So you don't have to worry about checking a CAV-2 titer. All other vaccines are non-core canine vaccines that for the most part need to be given annually. They include Lepto Lyme, and Bordetella/CPI. The CPI doesn't need to be given annually, but Bordetella should be and CPI is part of the combination product. I don't know of any dog that needs to receive a corona vaccine or giardia vaccine, so why would you worry about a titer?

So yes, antibody titer is important for certain diseases in every species and yes, this test could be very useful in knowing if the individual animal has responded to initial vaccination or if the animal has sterilizing immunity.



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