QUESTIONS & ANSWERS

Innovax® ND ND-SB

HVT recombinant vaccines are new to the poultry industry. Following are some common questions and answers prepared to help you better understand what these vaccines are and how they work.

What is INNOVAX®-ND* vaccine?

INNOVAX-ND* vaccine is a recombinant HVT-vectored Newcastle Disease (ND) vaccine.

What is a "recombinant HVT ND vaccine"?

HVT is a turkey herpes virus vaccine used to aid in the prevention of Marek's Disease in chickens. This *recombinant* HVT is one in which genetic material from another virus (in this case, NDV) has been inserted into the genome of the HVT virus at a site which does not have significant impact on the function of the HVT virus itself. Therefore, we have protection against both Newcastle and Marek's Disease.

Does inserting new genetic material hurt the ability of the HVT virus to protect against Marek's Disease?

No, the efficacy of a recombinant HVT vaccine against Marek's challenge is dependent upon the location of the insertion of the foreign gene(s). Standard challenge studies with **INNOVAX-ND*** vaccine demonstrate protection against vvMDV challenge.

What is inserted into the recombinant HVT?

Merck Animal Health researchers have inserted the DNA complement of the NDV RNA Fusion (F) gene coding for Fusion protein. The F protein, located as protein spikes at the outside of the NDV, initiates NDV infection by fusion of the virus to the cell membrane. Antibodies produced against the F-protein help to prevent the NDV virus from attaching to cells. The immune system of the chicken responds to these proteins as though they were on an actual ND virus.

Is this a live ND virus?

No, it is a live **HVT recombinant vaccine** containing the F gene that codes for the NDV fusion protein. There is NO live ND virus in this vaccine. The vaccine cannot induce ND reaction, spread ND virus or interfere with other respiratory vaccines. Innovax ND can be used safely in ovo or subcutaneously, while Innovax ND-SB is approved for in ovo use only.

In fact, if used alone, the vaccine is considered a DIVA vaccine (Differentiation of Infected from Vaccinated Animals). Antibody against the F-protein is protective, but cannot be detected by routine serological tests (HI or ELISA). Therefore, these tests can be used to distinguish vaccinated flocks from flocks exposed to live virus.

Can we use the INNOVAX-ND* vaccine with other Marek's Disease Vaccines?

DO NOT use INNOVAX-ND* vaccine together with regular HVT vaccines or other recombinant HVT vaccines. Other HVT vaccines have been shown to interfere with immunity to the foreign genes inserted into any recombinant HVT vaccine. In other words, you may be protected against Marek's Disease, but not against ND.

*Applies to Innovax® ND-SB also

MERCK Animal Health

Can I use a partial dose of this vaccine?

No, dilution or partial dose of the vaccine will delay the onset of immunity or may reduce efficacy. DO NOT USE LESS THAN THE FULL LABEL-RECOMMENDED DOSAGE.

What is the duration of immunity against ND?

The rHVT-ND of the **INNOVAX-ND*** vaccine, like conventional HVT, will persist and replicate life-long in the vaccinated bird. It will protect against both Marek's Disease and Newcastle Disease for the life of the flock. Duration of immunity studies using a vNDV challenge have shown full protection for at least 60 weeks following in ovo vaccination with **INNOVAX-ND***. No ND vaccines were used in this study.

What are the advantages of using INNOVAX-ND* vaccine instead of conventional live or inactivated ND vaccines?

The live ND vaccines produced in chicken embryos may spread from bird-to-bird, house-to-house or farm-to-farm. They can produce respiratory reactions and they can interfere with protection against other respiratory viruses such as infectious bronchitis and ILT. **INNOVAX-ND*** provides protection against severe ND challenge without inducing respiratory vaccination reaction or interfering with other live respiratory vaccinations. **INNOVAX-ND*** requires only a single vaccination at the hatchery for life-long protection. It is safe and convenient, and it even offers the opportunity to distinguish vaccinated flocks from wild ND exposed flocks via serology.

What about early ND challenge in severe ND areas?

Live conventional ND vaccines (such as Newhatch-C2®) may be given to flocks at one day of age to induce early and local protection until full protection from the recombinant vaccine is achieved.

What are key problems that could result in an outbreak of ND in an INNOVAX-ND* vaccinated flock?

Several key problems could result in incomplete protection of a flock:

Faulty administration of the **INNOVAX-ND*** vaccine at the hatchery. **INNOVAX-ND***, like HVT and all HVT recombinant vaccines, does not spread. Birds that are missed during *in ovo* vaccination at the hatchery will remain naive. They will not develop an immune response to ND. Partial dosage is never recommended with recombinant HVT vaccines. Even if two percent are missed, mortality could be 2,000 birds out of 100,000.

1. **Simultaneous or subsequent vaccination with other rHVT vaccines.**

   INNOVAX-ND* vaccine should not be used in combination with other recombinant HVT products. The vaccines may interfere with protection against one or both gene insertions.

2. **Early exposure to ND challenge.**

   Full protection against vND may take up to four weeks. Earlier challenge may cause some clinical signs or mortality, but severity may be reduced by partial immunity.

If there are additional questions relating to the HVT recombinant vaccines or any other Merck Animal Health vaccines and products, please call Technical Services at 1-800-211-3573. You may also visit our website at www.innovaxvaccines.com or www.merck-animal-health-usa.com for more information.

*Applies to Innovax®-ND-SB also

MERCK Animal Health