



An interview with
Angela Hartman, PhD
Senior Principal Scientist
Zoetis



IBDV protection: Closing the gap between passive and active immunity

Q: The latest vaccine from Zoetis, Poulvac® Procerta™ HVT-IBD, is a recombinant that protects against infectious bursal disease virus (IBDV) and Marek's disease virus (MDV). The industry already has vaccines in this category. Why bring another to market?

AH: Broilers are initially protected against IBDV by the maternal antibodies they get from breeders. However, those antibodies start to decline at around 14 days of age. To maintain protection, broilers need to be vaccinated.

Many poultry companies use recombinant IBDV vaccines, which are conveniently administered *in ovo*. Recombinants may not always initiate immunity by the time maternal antibodies wane. That can leave a gap in immunity¹ and poses a big risk for young birds, especially those under 3 weeks of age. If they become infected, they can end up with severe immunosuppression and secondary bacterial infections. At Zoetis, our team of scientists set out to build a recombinant vaccine that would bridge the gap.

Q: Were they successful in achieving early IBDV immunity?

AH: In our studies, Poulvac Procerta HVT-IBD demonstrated early protection against AL2 and classic IBDV at 14 days of age — about the same time that maternal antibodies are on the decline.^{2,3,4}

We also conducted a study that showed a high level of efficacy — 90% — against very virulent IBDV at 12 days of age.⁵

Q: How was the new vaccine constructed?

AH: Our team combined state-of-the-art recombinant technology with a very methodical approach that allowed us to raise the bar for early protection.

The backbone of our new vaccine is a herpesvirus of turkey (HVT), which replicates well and protects against MDV. The IBDV gene — known as viral protein 2 or VP2 — is inserted into the HVT backbone. We also made sure we had good VP2 expression.

continued

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¹ Gelb J, et al. Efficacy of Recombinant HVT-IBD Vaccines Administered to Broiler Chicks from a Single Breeder Flock at 30 and 60 Weeks of Age. *Avian Dis.* 2016 Sep;60(3):603-12.

² Hartman A, et al. Early onset of immunity and duration of immunity of a recombinant HVT-IBD vaccine against virulent, variant, and very virulent IBD. 2020. 63rd AAAP Annual Meeting.

³ Ibid.

⁴ Ibid.

⁵ Data on file. Study Report No. B812R-US-19-B42. Zoetis LLC.

⁶ Hartman A, et al. Early onset of immunity and duration of immunity of a recombinant HVT-IBD vaccine.

⁷ Ibid.

⁸ Ibid.

⁹ Data on file. Study Report No. B911R-US-18-A55. Zoetis LLC.

¹⁰ Data on file. Study Report No. B911R-US-18-A56. Zoetis LLC.

For more information, contact
Angela Hartman
(angela.hartman@zoetis.com) or your
Zoetis representative.

The initial work was largely *in vitro*. We built 38 different constructs, then narrowed down the list to the most promising to test in birds. The birds told us which construct provided better early immunity.

Q: So what is it about the construction of Poulvac Procerta HVT-IBD that enables it to provide early protection?

AH: Fast replication of the HVT, coupled with strong expression of the IBDV gene, are largely responsible for the ability of the vaccine to provide effective early immunity.

Q: Early protection is important, but how long is the vaccine effective?

AH: Our duration-of-immunity studies showed 100% efficacy up to at least 63 days of age against standard infectious bursal disease.⁶ Protecting young broilers against IBDV is important but so is protecting them throughout their life since IBDV can cause immunosuppression in older birds too.

Q: Poulvac Procerta HVT-IBD can be administered *in ovo* or by subcutaneous injection on day of age. Is there an advantage to one over the other?

AH: The vaccine provides strong protection administered either way, but we did find that with *in ovo* administration using the Embrex® Inovoject® system, the IBDV titer response was faster and stronger.^{7,8} So, *in ovo* administration of Poulvac Procerta HVT-IBD with Inovoject can really increase its impact.

Q: Did you observe any adverse effects from the vaccine?

AH: Recombinant vector vaccines are widely known to be safe. Nevertheless, we confirmed the vaccine's safety in several studies.^{9,10}

Q: What else can broiler producers do to improve IBDV control with vaccination?

AH: Start by hyperimmunizing broiler breeders against IBDV so they provide maternal antibodies that will protect their offspring the first couple of weeks of life. If you follow up with Poulvac Procerta HVT-IBD in broilers to provide active immunity, there's much less risk of immunosuppression. That, in turn, should eliminate or minimize losses due to IBDV.

With better IBDV control, you'll also have less viral shedding. Your field virus will circulate less over time, and that will set up future flocks for even better IBDV control.

toolbox

Toolbox is a series of interviews with veterinarians and other technical specialists about their experiences managing antimicrobials, vaccines and other tools for poultry health. It is produced by the editors of *Poultry Health Today*® on behalf of the US Poultry Business of Zoetis.

To contact *Poultry Health Today*:
editor@poultryhealthtoday.com
POULTRYHEALTHTODAY.COM

To contact Zoetis:
855.702.1036
ZOETISUS.COM/POULTRY

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