



Tough protection

Nobilis® Rhino CV

Solid immunity against
Avian Pneumovirus infections

Avian Pneumovirus Infection

Avian Pneumovirus Infection

Avian Pneumovirus (APV) infection causes respiratory disease in chickens. Clinical signs of APV infection are aggravated by concomitant viral or secondary bacterial infections and poor management practices.

Layers and Breeders

Avian Pneumovirus infection is associated with:

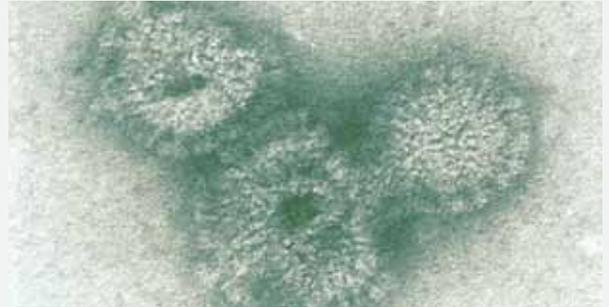
- Decreased egg production
- Decreased hatchability
- Changes in egg shell and internal quality
- Respiratory signs

Broilers

Swollen Head Syndrome (SHS) is associated with Avian Pneumovirus infections of the respiratory tract combined with secondary bacterial infections such as E.coli. Broilers are usually affected after 3 weeks of age.

Consequences of SHS are:

- Increased mortality rates
- Increased use of antibiotics
- Poor feed conversion rates
- Increased condemnation rates



Electron microscope image of APV virus



Chicken affected by APV infection*



Purulent exudate under the skin of the head

Single vaccination, long-lasting immunity

Long-term immunity against APV infection

A single vaccination with Nobilis Rhino CV provides protection through to at least 16 weeks of age. Thus no booster vaccinations are required.

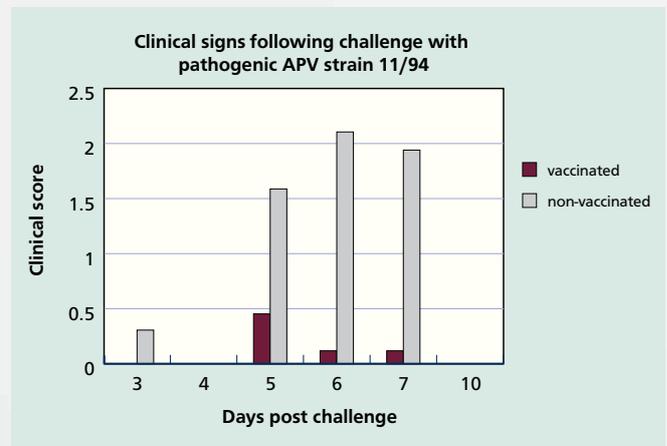
Trial

- Day-old MDA*-positive chickens vaccinated with Nobilis Rhino CV by coarse spray.
- Non-vaccinated group as controls.
- 16 week post-vaccination challenge with APV strain 11/94.
- Clinical signs recorded for 10 days post challenge.

Assessment of clinical signs

Score	Clinical signs
0	No clinical signs
1	Slight nasal exudate
2	Moderate nasal exudate
3	Copious nasal exudate
4	Turbid nasal exudate
5	Ocular discharge
6	Swollen sinus

Results



Conclusion

Nobilis Rhino CV administered at one day of age in the presence of maternal antibodies provides good protection against APV infection for at least 16 weeks.

* Maternally Derived Antibodies



Nobilis Rhino CV and Nobilis RT inac

Complete protection for breeders and layers

Nobilis Rhino CV, an effective primer for Nobilis RT inac

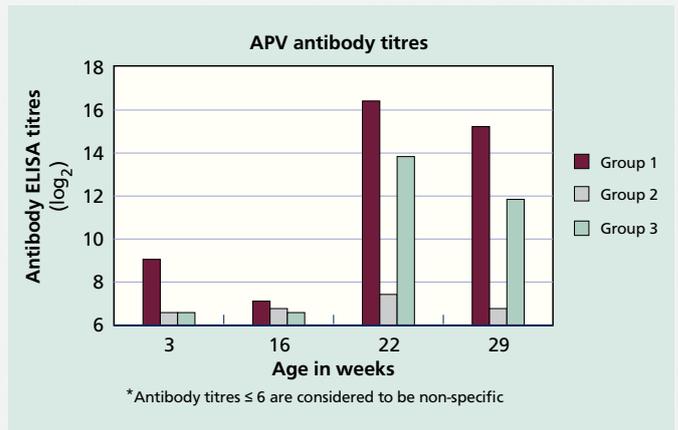
Trial

- SPF day-old chickens were divided into three groups as follows:

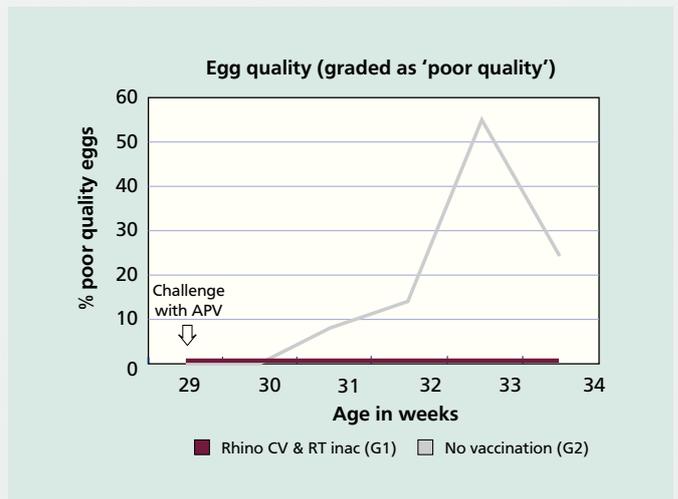
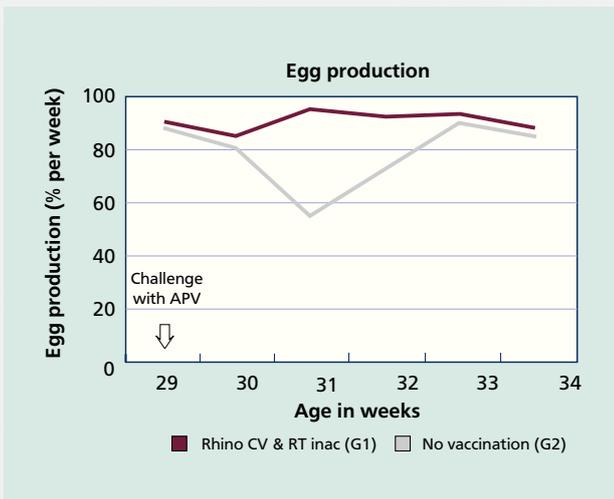
	Nobilis Rhino CV (day old)	Nobilis RT inac (16 weeks)	Challenge (29 weeks)
Group 1	Yes	Yes	Yes
Group 2	No	No	Yes
Group 3	No	Yes	No

- Birds were challenged at 29 weeks with APV 11/94.
- Antibody levels were determined by an in-house ELISA.
- Daily egg production and the percentage of eggs graded as "poor quality" were recorded.

Results



Safeguards egg production and egg quality



Conclusion

Nobilis Rhino CV is an effective primer for subsequent vaccination with Nobilis RT inac. Higher antibody levels are found than after the use of the inactivated vaccine alone. Furthermore, a vaccination program with live and inactivated APV vaccines protects against the negative effect on egg quality and drop in egg production caused by APV infections.

Compatible with other live vaccines

Compatibility of Nobilis Rhino CV with other live vaccines

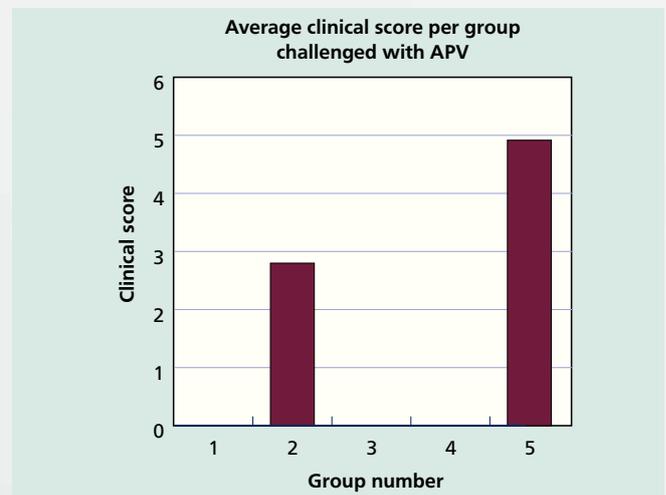
Trials were done to test the simultaneous use of Nobilis Rhino CV with certain other live vaccines.

Vaccines were administered by eye drop in various combinations. Challenges were done by eye drop and the birds were monitored for clinical signs.

Trial 1: Efficacy of Nobilis Rhino CV when given simultaneously with other live vaccines

	Day 1	Day 7	Day 14
Group 1	Nobilis Rhino CV Nobilis H120 Nobilis NDC2	Nobilis Gumboro D78	Nobilis IB 4/91
Group 2	Nobilis H120 Nobilis NDC2	Nobilis Gumboro D78	Nobilis IB 4/91
Group 3	Nobilis Rhino CV Nobilis ND Clone 30 Nobilis IB Ma5	Nobilis Gumboro D78	Nobilis IB 4/91
Group 4	Nobilis Rhino CV	No vaccination	No vaccination
Group 5	No vaccination	No vaccination	No vaccination

All groups were challenged with virulent APV strain 11/94 at 5 weeks of age by eye drop.



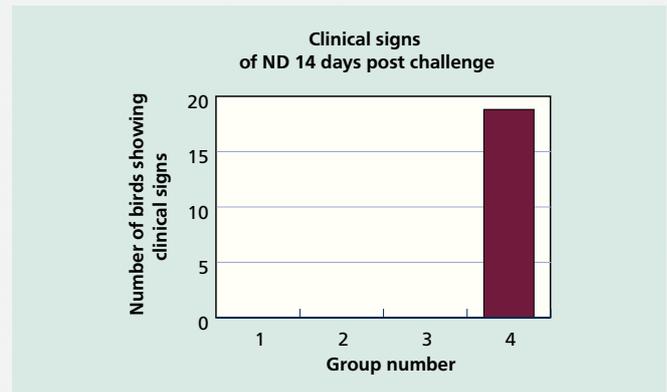
Flexible vaccination - no compromise

Trial 2: Efficacy of Newcastle Disease vaccination given simultaneously with Nobilis Rhino CV

	Vaccines given at 1 day old
Group 1*	Nobilis Rhino CV Nobilis ND Clone 30
Group 2*	Nobilis Rhino CV Nobilis ND C2
Group 3*	Nobilis ND C2
Group 4*	No vaccination

* 20 chickens in each group

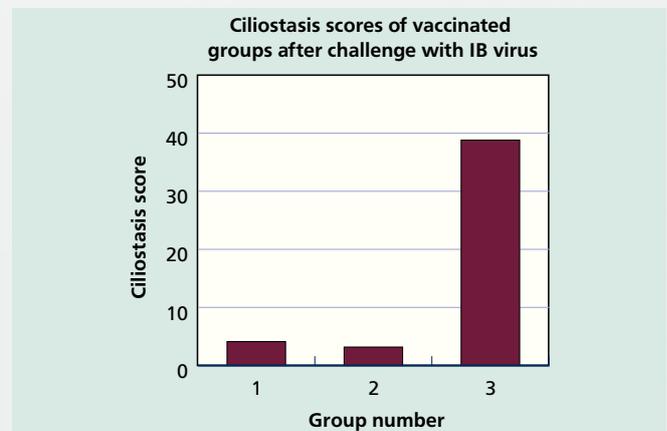
At 3 weeks of age, the chickens were challenged intramuscularly with velogenic NDV.



Trial 3: Efficacy of Infectious Bronchitis vaccination when given simultaneously with Nobilis Rhino CV

	Vaccines given at 1 day old
Group 1	Nobilis H120
Group 2	Nobilis IB H120 Nobilis Rhino CV
Group 3	Nobilis Rhino CV

Three weeks later all 3 groups were challenged by eye drop with IB (Massachusetts) and protection was assessed using the ciliostasis test (the higher the score, the lower the ciliary activity; a score of < 20 indicates that the trachea is protected).



Serology

In all three trials, Nobilis Rhino CV vaccination did not affect serum responses to any of the other vaccines.

Conclusion

The simultaneous administration of Nobilis Rhino CV with IB and ND vaccines gives full protection against Avian Pneumovirus infection and did not affect the performance of the tested vaccines.

A homologous chicken APV strain

Tough protection for chickens

Protection for layers, breeders and broilers

Nobilis Rhino CV is a homologous live vaccine for protection against APV infections in layers, breeders and broilers.

Nobilis Rhino CV

- A homologous chicken strain of Avian Pneumovirus (strain APV subtype B -11/94) specifically selected for the immunization of chickens.
- One vaccination at one day of age provides lifelong immunity in broilers.
- Nobilis Rhino CV as a primer for Nobilis RT inac provides protection for a full laying period against APV-related drops in egg production and poor egg quality.
- Nobilis Rhino CV is compatible with IB and ND vaccines.
- Administration by coarse spray or eye drop from one day of age onwards.



Solid immunity against Avian Pneumovirus infections

Suggested vaccination schedule

	Age	Vaccine
Broilers	From day 1 onwards	Nobilis Rhino CV
Breeders/ Layers	1-2 weeks	Nobilis Rhino CV
	16-20 weeks	Nobilis RT inac (or combinations)

Description

Nobilis Rhino CV is a homologous live freeze-dried vaccine against Avian Pneumovirus infection in chickens. Each dose contains at least $10 \log^{1.5}$ TCID₅₀ of live attenuated Avian Pneumovirus strain 11/94.

Indication

Nobilis Rhino CV is indicated for the active immunization of chickens to reduce the clinical signs and effects of infection with Avian Pneumovirus.

Administration

The vaccine can be administered by coarse spray or eye drop.

Presentation

Nobilis Rhino CV is available in 1000-, 2500- and 5000-dose.

