

VACCINE LINE

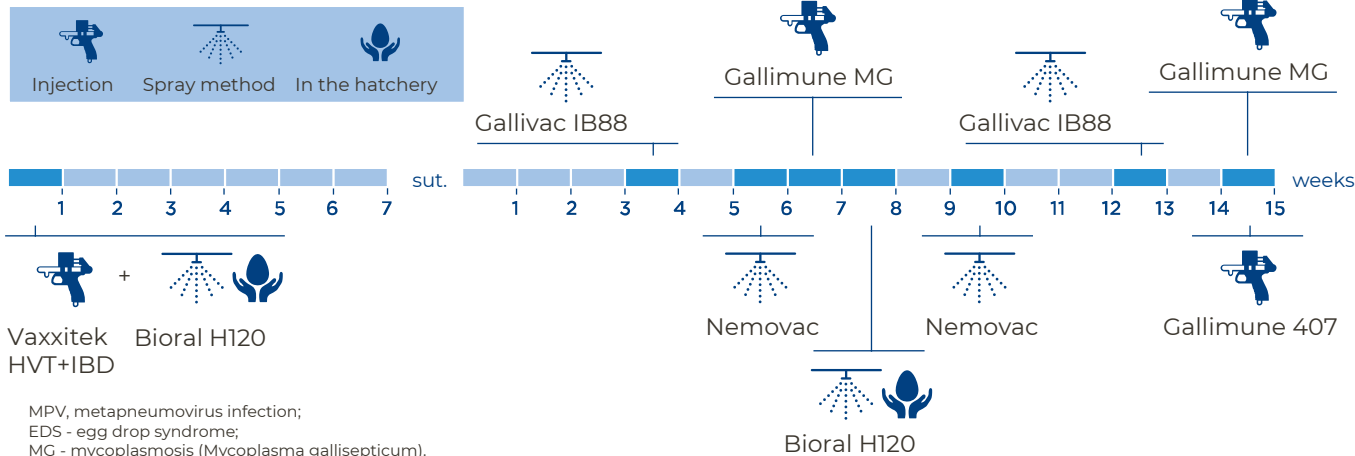
MAIN ADVANTAGES

- Careful selection of strains
- Formulated to provide a strong and long-lasting booster effect in protecting long-lived birds 4-6
- Aimed at minimizing post-vaccination reactions at the injection site
- Verified concentration of antigens
- Unique reduced viscosity**** adjuvant formula to achieve full dose delivery

Gallimune RANGE 0.3ml



Possible scheme of vaccination of laying hens against IB + MPV + EDS + MG*



Equipment for vaccination



ZOOTEC Vaccination of day old chicks in the hatchery with vector and inactivated vaccines

- One or two vaccines in one injection
- Simple needle adjustment
- Ease of maintenance

Type of vaccine:

Vaxxitek
+ all inactivated vaccines



EZ JECT Vaccination of day old chicks in the hatchery and chick young animals in poultry houses with vector and inactivated vaccines

- Choice of vaccination with one or two vaccines through one or two needles
- Does not require special air handling system Constant
- accurate fixed dose

Type of vaccine:

Vaxxitek
+ all inactivated vaccines



ROBOT EZ JECTOR Vaccination of day old chicks in the hatchery with vector and inactivated vaccines

- Only compressed air is needed for operation
- Vaccination of two chickens at the same time
- Vaccination of up to 5,000 birds per hour
- Injection accuracy does not depend from operator qualification

Type of vaccine:

Vaxxitek
+ all inactivated vaccines

GALLIMUNE 407 ND+IB+EDS+ART (Water in oil, inactivated vaccine against Newcastle Disease, Infectious Bronchitis, Egg Drop Syndrome & Avian Rhinotracheitis) - Booster immunization of breeder and layer pullets after vaccination with live vaccines against: Newcastle Disease in order to reduce egg drop linked to Newcastle Disease infection, Infectious Bronchitis in order to reduce egg drop linked to Infectious Bronchitis infection caused by Mass41 strain & Avian metapneumovirus in order to reduce respiratory signs linked to avian metapneumovirus infection (Avian Rhinotracheitis). Active immunization of breeder and layer pullets in order to reduce egg drop linked to infection with Egg Drop Syndrome virus EDS76 without priming. **Dosage, routes and method of administration:** Administer one dose (0.3 ml) by intramuscular route from the age of 18 weeks and at least 4 weeks after the priming with live vaccines against Newcastle Disease (strain Hitchner B1 or VG/GA), Infectious Bronchitis (strain Mass H120), and avian metapneumovirus (strain PL21). **Storage:** Store and transport refrigerated (2 – 8) °C. Protect from light. Do not freeze. Use entire contents when first opened. **Precautions:** Vaccinate only healthy birds. Apply usual aseptic procedures. Do not use syringes with natural rubber-based or butyl-derived elastomer pistons. Avoid intravenous injection. In case of accidental self-injection, acute local inflammatory reactions may develop, especially in case of a high-pressure injection in the area of the fingers or hand joint (the severity and the evolution of the lesions depend primarily upon the site of the accidental injection). Keep out of reach of children. For Animal Treatment only. **AMoëu¹ gMêu² gM-oMu³ !⁴ u⁵ !⁶ oM !⁷ -Ao fê !⁸ >Mô>ô**



**VACCINE AGAINST NEWCASTLE DISEASE, CHICKEN
INFECTIOUS BRONCHITIS, EGG DROP SYNDROME
AND METAPNEUMOVIRUS INFECTION OF BIRDS
INACTIVATED**

GALLIMUNE 407 ND+IB+EDS+ART

BROAD SPECTRUM VACCINE FOR LAYERS AND PARENT STOCK

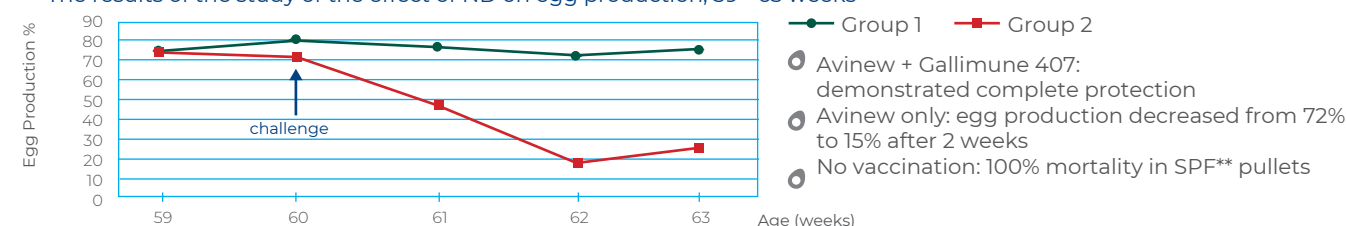
Gallimune 407— it is a polyvalent inactivated vaccine (water-oil emulsion) against Newcastle disease (ND), infectious bronchitis of chickens (IBD), egg drop syndrome (ESD) and metapneumovirus infection (MPV). Designed for use in re-vaccination of future laying hens and parent stock to create long-term protection against NB, IB, EDS, MPV and maintaining egg quality and egg production (EDS) and metapneumovirus infection (MPV) in birds. Designed for use in re-vaccination of future layers and parent stock to provide long-term protection against ND, IB, EDS, MPV and maintain egg quality and productivity.



Countering Newcastle Disease1

Group	bird type	Avinew*	Gallimune 407	ND Challenge at 60 weeks
G 1	commercial laying hens	4 and 8 wks	18 weeks	Herts strain
G 2	commercial laying hens	4 and 8 wks.	-	Herts strain

The results of the study of the effect of ND on egg production, 59 - 63 weeks

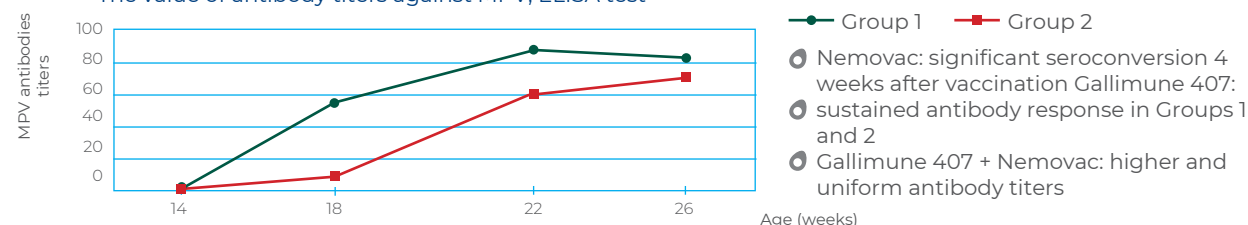


Counteracting Metapneumovirus Infection 2

Immunogenicity of Gallimune 407 after primary vaccination with Nemovac by oral route and assessment of serology.2

Group	bird type	Nemovac *** (orally)	Gallimune 407
G 1	SPF laying hens	14 weeks	18 weeks
G 2	SPF laying hens	-	18 weeks

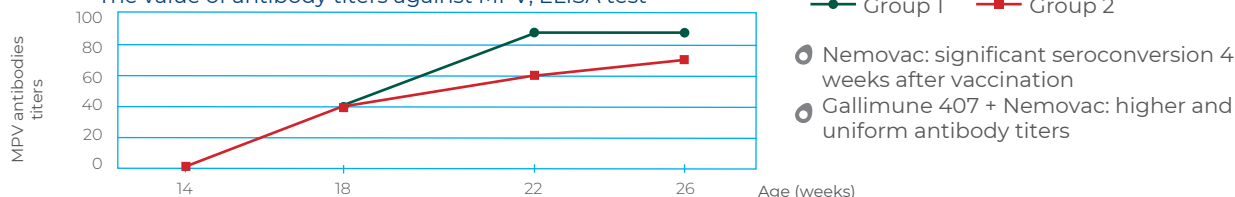
The value of antibody titers against MPV, ELISA test



Immunogenicity of Gallimune 407 after primary vaccination with Nemovac spray method and evaluation of serology.2

Group	bird type	Nemovac *** (orally)	Gallimune 407
G 1	commercial laying hens	14 weeks	18 weeks
G 2	commercial laying hens	-	18 weeks

The value of antibody titers against MPV, ELISA test

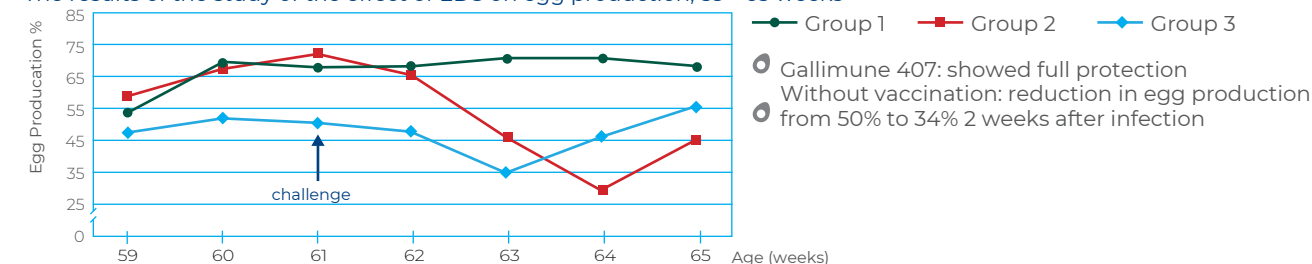


References
1. Dr François-Xavier Le Gros, Gallimune®: an ad hoc vaccine for commercial pullets, Major challenges in the egg production chain: control & perspectives, Lyon, France, 2010.
2. Efficacy against Avian Rhinotracheitis combining Nemovac and Gallimune 407. Potency of Gallimune 407 following a priming vaccination with Nemovac by oral route and assessed by serology, Layer forum, France, Lyon, 2010. 3. De Wit JJ, Van de Sande H, Prandini F, 2009. Enhanced efficacy of the use of a monovalent infectious bronchitis virus inactivated vaccine in Layers primed with H120 and 793B live IBV vaccines to increase the protection against challenge with 3 European serotypes of IBV. 11th International Symposium on Avian Corona and Pneumoviruses, Ralscholzhausen, Germany, June 14th - 17th, p158-166. 4. Bennejean G, et al. Avian Pathol. 1978 Jan;7(1):15-27. 5. Sugiyama M, et al. Drop of Egg Production in Chickens by Experimental Infection with an Avian Metapneumovirus Strain PLE811 Derived from Swollen Head Syndrome and the Application to Evaluate Vaccine. Vet Med Sci. 2006 Aug;68(8):783-787. 6. Barbour E.K. et al. Evaluation of essential oils in the treatment of broilers co-infected with multiple respiratory etiologic agents. Int. J. Appl. Res. Vet. Med., 4: 317-333. 2011.

Counteracting Egg Drop Syndrome1

Group	bird type	Vaccine (16 weeks of age)	EDS76 infection at 61 weeks of age
G 1	commercial laying hens	Gallimune 407 (0.3 ml)	Strain V127/4
G 2	commercial laying hens	Not vaccinated	Strain V127/4
G 3	SPF ** laying hens	Not vaccinated	Strain V127/4

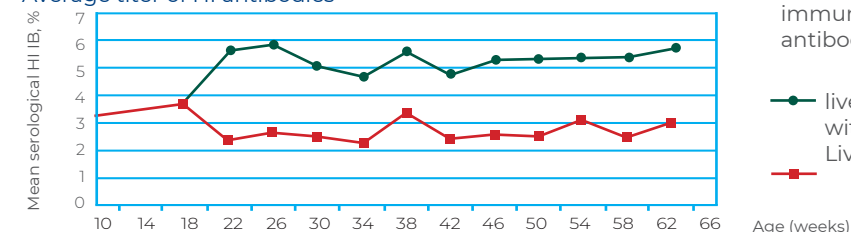
The results of the study of the effect of EDS on egg production, 59 - 65 weeks



Counteracting Infectious bronchitis of chickens3,4

Age	Booster program	Live vaccine only
Day 1	H120	14 weeks
Week 18	Gallimune 407	-

Average titer of HI antibodies



Immunogenicity

- Immune activity was measured by HI antibody titration. Data on egg production indicated the formation of protection from IBV.
- Re-vaccination with Gallimune 407 strengthened the immune system, as evidenced by an increase in HI antibody titer in immunized birds.

Cross protection against variant strains of IBV and QX 1

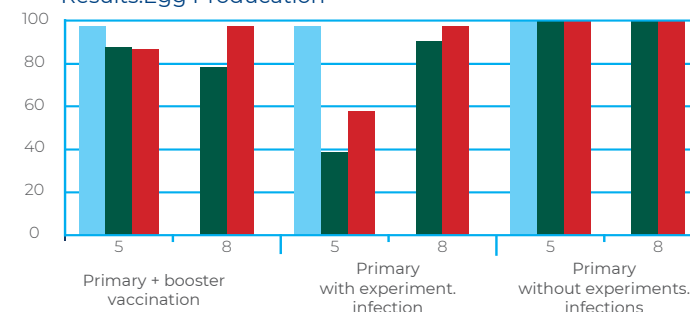
Age	Primary + booster vaccination	Primary with experiment. infection	Primary without experiment. infections
Day 1	H120	H120	H120
Week 4	CR88	CR88	CR88
Week 10	CR88	CR88	CR88
Week 15	Gallimune 407	-	-
Week 31	Experiment. infection with IBV strain M41, 793B or QX		

Ciliostasis test results

Experiment. strain	Primary + booster vaccination	Primary with experiment. infection	Primary without experiment. infections
M41	99%	96%	99%
793B	95%	81%	100%
QX	89%	77%	100%
Avg. level protection	94%	85%	100%

- The efficacy of vaccination programs with or without a booster dose of inactivated vaccine at week 15 was studied by experimental challenge with Mass41, 793B (4/91) strains. and QX (D388). Pullets reared under experimental conditions were injected with the H120-based vaccine on the first day of life and the CR88-based vaccine at the 4th and 10th weeks. After 31 weeks, the layers were experimentally infected. Egg production was measured 5 and 8 days after infection, and tracheal tissue samples were taken from the birds to determine the level of protection. (test for ciliostasis).
- Results of ciliostasis tests 5 days after experimental challenge (protection against ciliostasis in %) show an equivalent level of protection against homologous strains Mass and 793B and cross protection against the QX strain in the group, in which Gallimune 407 was revaccinated.

Results: Egg Production



- Re-vaccination with Gallimune 407 at week 15 in pullets vaccinated with H120 and CR88 strains as primers has been shown to increase protection against ciliostasis in a study and decrease in egg production under the influence of homologous and heterologous strains of the IB virus.