

RHINISENS[®]



with HIPRAMUNE[®] ^d

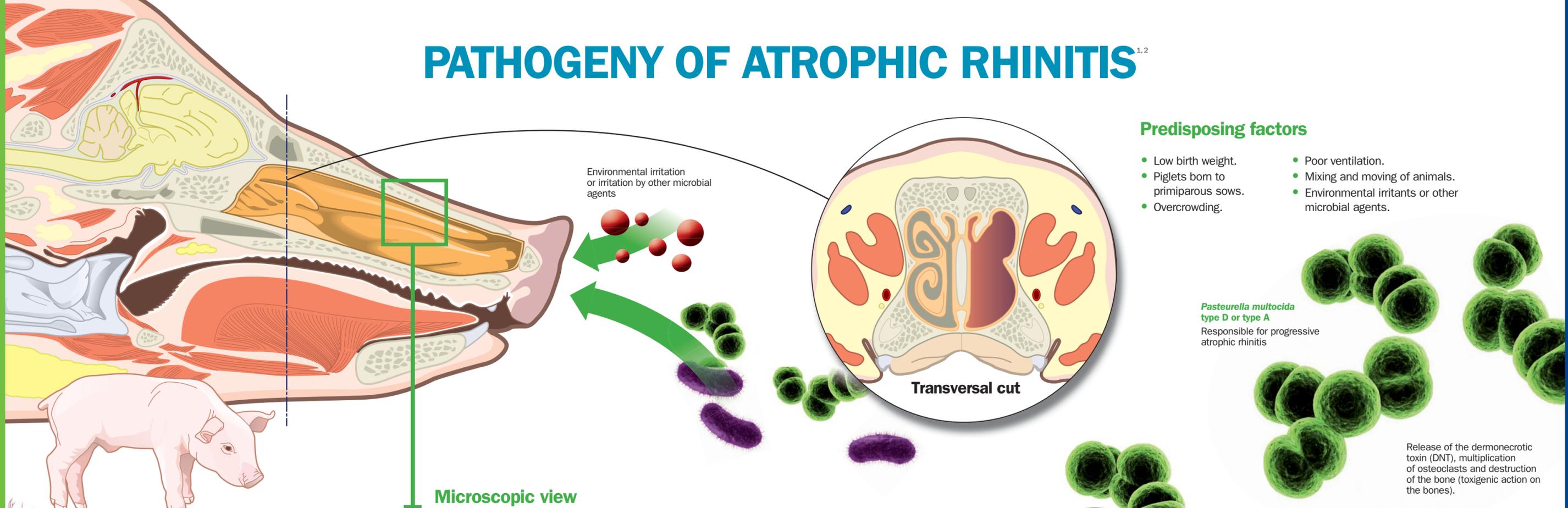
The **NEW VACCINE** for preventing Progressive and Non-progressive Atrophic Rhinitis of swine



**Fresh air
for your farm**



PATHOGENY OF ATROPHIC RHINITIS^{1,2}



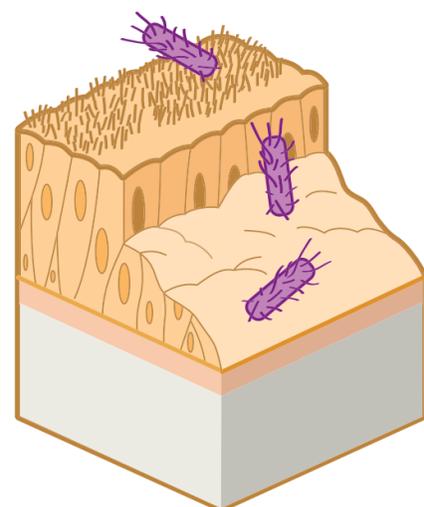
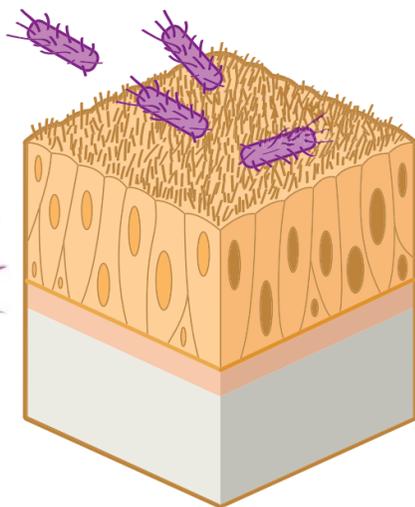
Pasteurella multocida type D or type A
Responsible for progressive atrophic rhinitis

Release of the dermonecrotic toxin (DNT), multiplication of osteoclasts and destruction of the bone (toxigenic action on the bones).

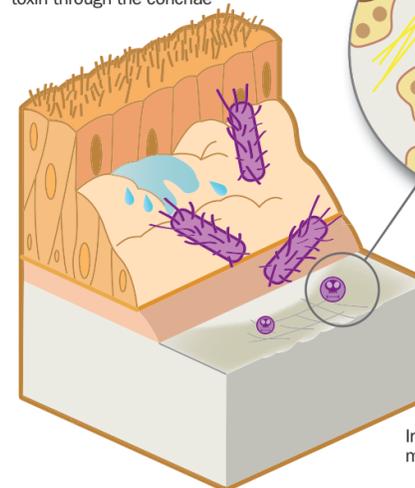
Symptoms

- Sneezing
- Mucopurulent nasal secretion

Bordetella bronchiseptica
Responsible for non-progressive atrophic rhinitis

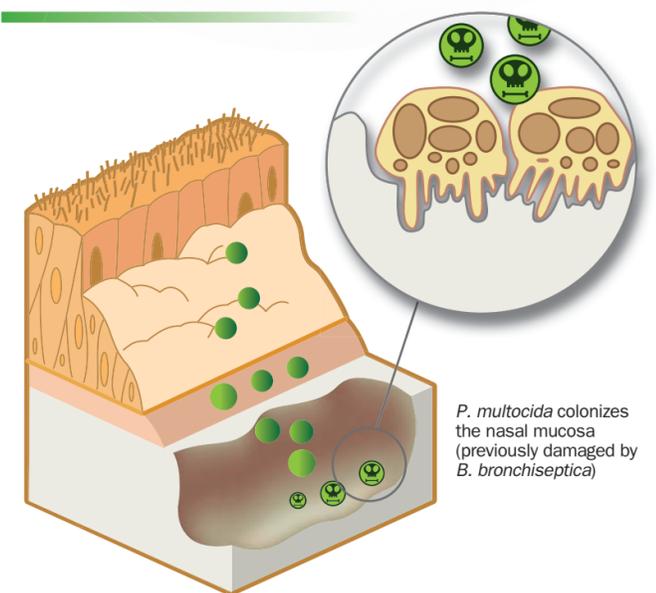


Release of DNT (dermonecrotic toxin) of *B. bronchiseptica* and spread of the toxin through the conchae



The DNT damages the osteoblasts and osteocytes interfering with the capture of calcium and altering osteogenesis

Inflammation of the nasal mucosa and secretion of mucus



Non-progressive atrophic rhinitis

Progressive atrophic rhinitis

B. bronchiseptica and *P. multocida* also damage your farm's profitability

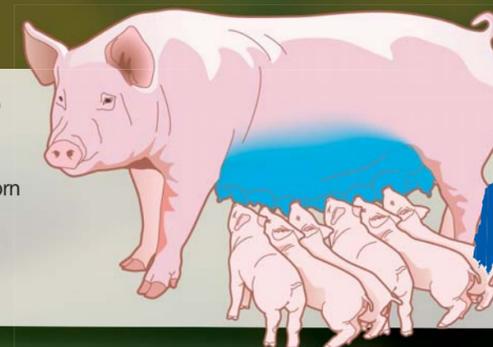


Delay in growth and drop in productive parameters³

- The greater the degree of damage in the nasal conchae the lower the growth of the animals.
- Decrease of the ADG:
 - 13.3% in the nursery (moderate-severe AR).
 - 6.2% (moderate AR) and 9.4% (severe AR) during fattening.
- Pigs with 6% lower weight at the end of fattening.
- The appearance of pneumonia and atrophic rhinitis (AR) are directly related. Pigs with AR are more likely to have lung lesions from pneumonia and vice versa. In animals that suffer from both pathologies, the final weight is 11.5% lower.

How can we avoid this?

- Piglets born to immunized sows display greater growth than those born to sows not vaccinated against AR⁴.



RHINISENS

Vaccination of the sows is the key factor to preventing this effect in piglets⁴

RHINISENG®

INNOVATION and BIOTECHNOLOGY for the animal production of the future

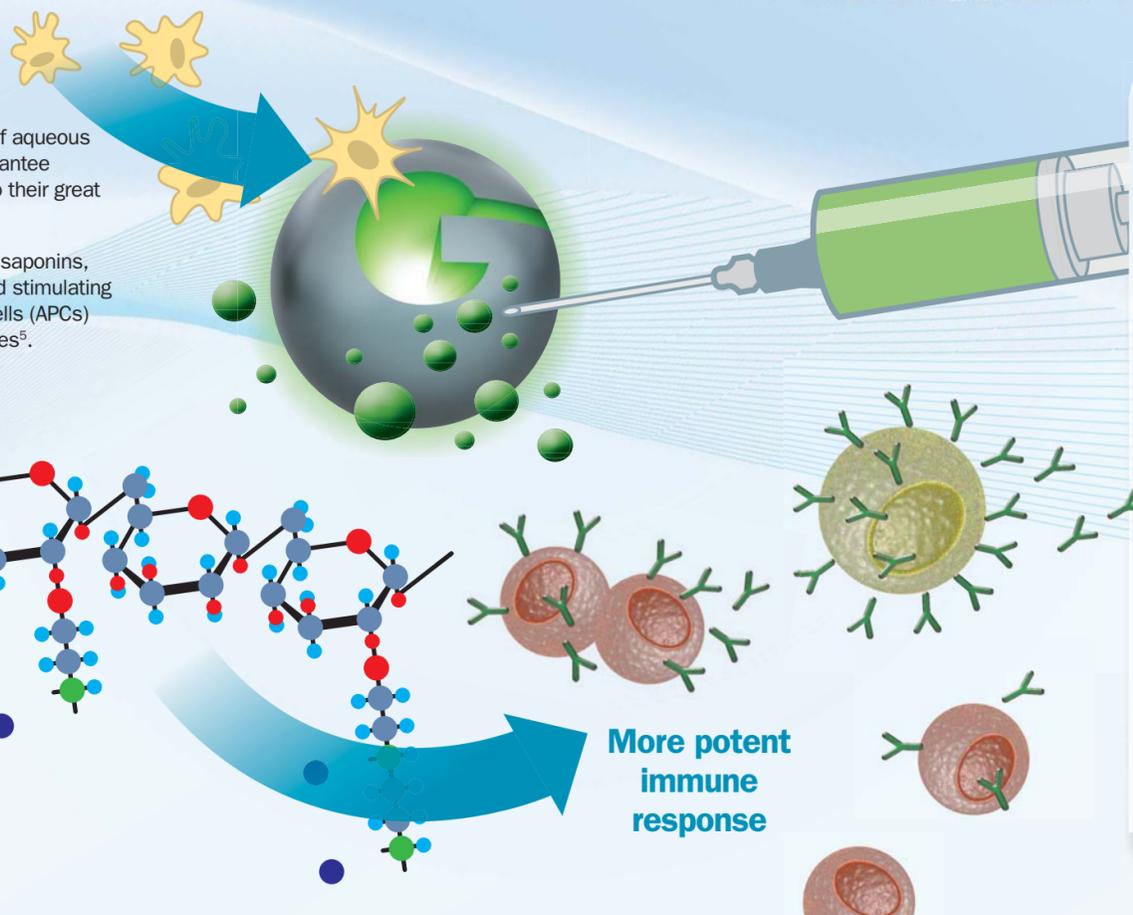


HIPRAMUNE®-G^d is a new generation of aqueous adjuvants designed by HIPRA that guarantee maximum safety and efficacy thanks to their great immunogenic potency.

HIPRAMUNE®-G^d incorporates ginseng saponins, which are responsible for attracting and stimulating the production of antigen presenting cells (APCs) such as dendritic cells and Macrophages⁵.



HIPRAMUNE®-G^d contains DEAE-dex, a polysaccharide with mitogenic capacity for the T lymphocytes and plasmatic cells that enhances the cellular and humoral immune response⁶.

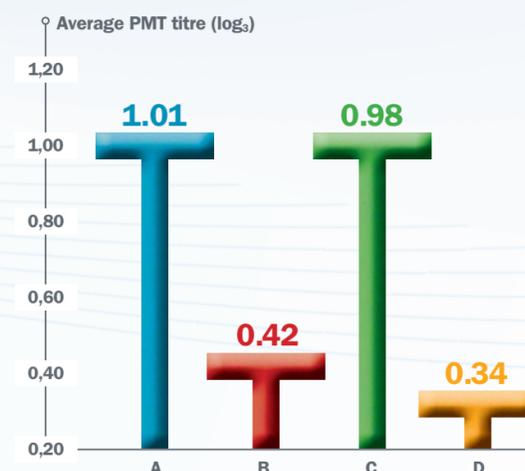


HIPRAMUNE®-G^d

The new “friendly” diluent that enhances the immune response against the *Pasteurella multocida* toxin and does not cause adverse reactions

HIPRA's R&D services conducted an experimental test⁷ to demonstrate the immunogenic capacity of **HIPRAMUNE®-G^d**. To do so, they vaccinated and revaccinated, 21 days later, 4 groups of 12-week-old pigs with different adjuvants and an equal quantity of antigen; titres were assessed on day 42 post-vaccination:

Adjuvant	Group	Adjuvant Composition
A	1.01	HIPRAMUNE®-G ^d
B	0.42	DEAE-dex 10%
C	0.98	DEAE-dex 3% + Quil A
D	0.34	DEAE-dex 0% + Quil A



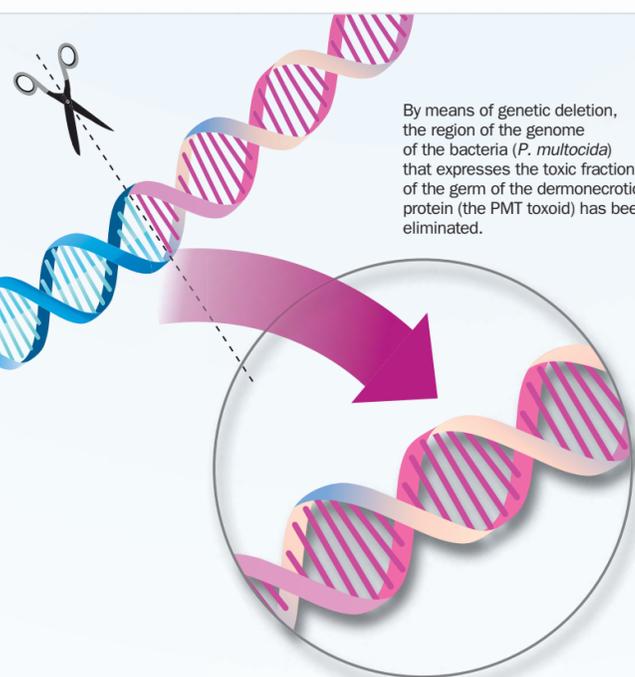
RECOMBINANT TECHNOLOGY for a safer and more efficacious vaccine



RHINISENG® incorporates the recombined toxin of *Pasteurella multocida* type D (PMT) maintaining its immunogenic capacity and eliminating the toxic character of the toxin.

Protection without toxicity!

The recombined toxin maintains the immuno-protective epitopes⁸.



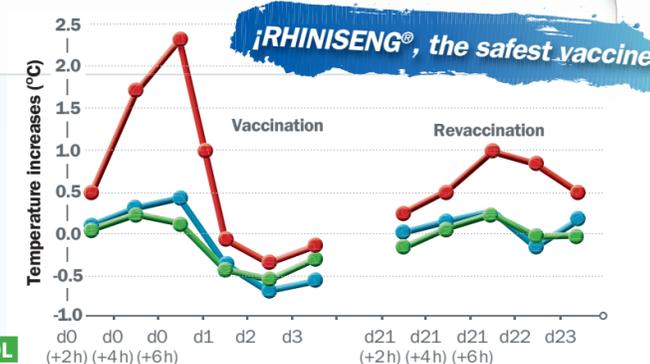
By means of genetic deletion, the region of the genome of the bacteria (*P. multocida*) that expresses the toxic fraction of the germ of the demonecrotic protein (the PMT toxoid) has been eliminated.

Demonstrated safety in comparison with the competition^{10,11}

An experimental study* on **RHINISENG®** and the main commercial vaccine against atrophic rhinitis of swine was conducted to assess their safety in the VACCINATION and REVACCINATION of sows.

*Based on temperature increases

RHINISENG® OTHER VACCINE WITH OIL-BASED DILUENT CONTROL

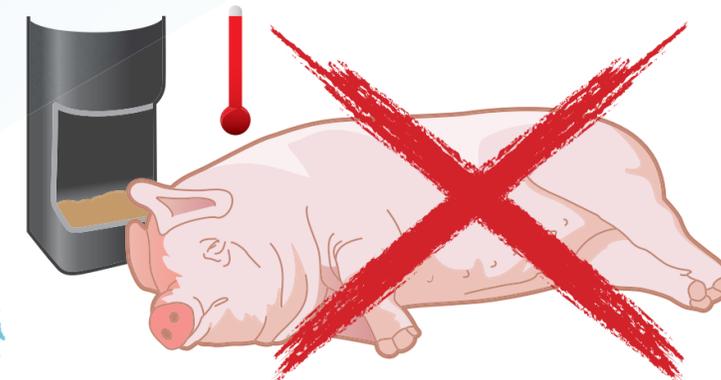


Less adverse reactions in animals

According to economic calculations, the non-productive days (NPDs) of a sow that aborts in the last trimester of gestation increase to 113 days, which has an economic impact of up to **€189 per aborted sow⁹**.



No more full feed troughs the day following vaccination!



RHINISENG®

DEMONSTRATED MAXIMUM EFFICACY

DEMONSTRATED EFFICACY for preventing progressive and non-progressive atrophic rhinitis of swine

The most demanding tests with a challenge demonstrate the efficacy of RHINISENG® in preventing progressive and non-progressive atrophic rhinitis of swine

The results were a determining factor in a CHALLENGE TEST¹⁰. Two groups of 10-day-old piglets were chosen and challenged with a strain of *Bordetella bronchiseptica* and *Pasteurella multocida* type D. The animals were sacrificed when 42 days old and assessed in accordance with the method described in the European Pharmacopeia.

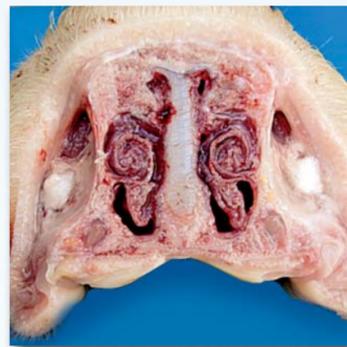
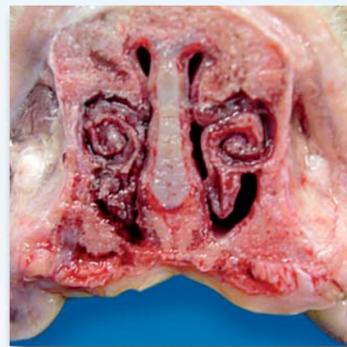
Bordetella bronchiseptica + *Pasteurella multocida*



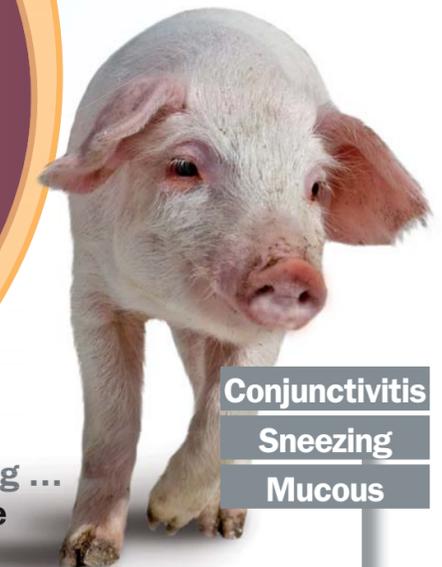
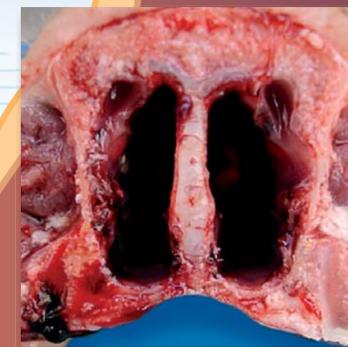
Nasal lesion score (average ± MSE [mean standard error]) when 42 days of age of the piglets considering the sow as an experimental unit in the Bb + Pm (A) and Pm (B) challenge groups.

^{a, b} The values with a different superscript different among experimental groups (t-test; p < 0,05).

With RHINISENG®:



Without RHINISENG®:



With RHINISENG® 
No more piglets sneezing when 10 weeks old!

Sometimes appearances can be deceiving ...
No external lesions but with considerable internal alterations

RHINISENS®



with HIPRAMUNE® d

Fresh air for your farm



An innovative, efficacious and safe vaccine



New technology for the animal production of the future



Maximum efficacy in preventing progressive and non-progressive atrophic rhinitis of swine



Maximum safety for the sow's well being



Clinical protection during fattening



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9. Economic report by SIP consulting S.L Ago 2009.
10. Hipra clinical trials.
11. Montané J, Torrents D, Mesonero JA, March R y Sitjà M. Eficacia y seguridad de una nueva vacuna frente a la rinitis atrófica porcina. Anaporc, 2011; (VII) 81: 26-29.



RHINISENS®: COMPOSITION PER DOSE: Active substances: Inactivated *Bordetella bronchiseptica*, strain 833CER: 9.8 BbCC (*) Recombinant Type D *Pasteurella multocida* toxin (PMT): ≥ 1 MED₅₀ (**)(*) *Bordetella bronchiseptica* Cell Count in log₁₀(**) Murine Effective Dose 63: vaccination of mice with 0.2 ml of a 5-fold diluted vaccine by subcutaneous route induces seroconversion in at least 63% of the animals. **Adjuvants:** Aluminium hydroxide gel, DEAE-Dextran, Ginseng. **INDICATIONS:** For the passive protection of piglets via colostrum after active immunisation of sows and gilts to reduce the clinical signs and lesions of progressive and non-progressive atrophic rhinitis, as well as to reduce weight loss associated with *Bordetella bronchiseptica* and *Pasteurella multocida* infections during the fattening period. Challenge studies have demonstrated that passive immunity lasts until piglets are 6 weeks of age while in clinical field trials, the beneficial effects of vaccination (reduction in nasal lesion score and weight loss) are observed until slaughter. **DOSAGE:** Administer one dose of 2 ml by intramuscular injection in the neck muscles according to the following schedule:



Basic vaccination: sows and gilts which have not been previously vaccinated with the product should be given two injections with an interval of 3-4 weeks. The first injection should be administered 6-8 weeks before the expected date of farrowing. Revaccination: a single injection should be given 3-4 weeks prior to each subsequent farrowing. **WITHDRAWAL PERIOD:** 0 days. **SPECIAL PRECAUTIONS:** Store and transport refrigerated (2 °C to 8 °C) Protect from light. Do not freeze. **PACKAGING:** 1 vial of 10 ds, 1 vial of 50 ds. Under veterinary prescription. FOR VETERINARY USE ONLY. Reg N° EU/2/10/109/001- EU/2/10/109/004. Use medicines responsibly.

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