

## ***TAbic® V.H. Safe & proven protection against Newcastle Disease, in a convenient presentation***

Phibro is introducing **TAbic® V.H.**, a live Newcastle vaccine formulated with the V.H. strain, characterized by its low ICPI = 0.15, its proven immunogenicity that induces a high level of circulating antibodies, and a solid protection against virulent velogenic strains. The V.H. strain is a genotype class 2 lentogenic strain, isolated in Israel throughout the early 1970's.

The **TAbic V.H.** name stands for **(V)** Vineland Laboratories (Israel) that isolated the strain and **(H)** for K. Hornstein, the virologist who worked on the formulation of this cloned Newcastle vaccine.

**TAbic V.H.** is presented in innovative eco-friendly, freeze dried effervescent tablets, sealed in aluminum blister packs. **TAbic V.H.** is lightweight, easy to transport, easy to dispose of and requires minimal storage space. Storage temperature should be between 2°C to 8°C

All around the world, poultry producers rely on the V.H. strain to protect their flocks against the devastation associated with the velogenic viscerotropic and velogenic neurotropic forms of the Newcastle virus.

In various studies, the V.H. strain successfully protected birds from challenge with different genotypes including G-7, G-6, G-5, and G-2.

### ***Proven protection against the Chimalhuacan strain of the NDV (G-5, ICPI 1.94). One of the most virulent strains in the world.***

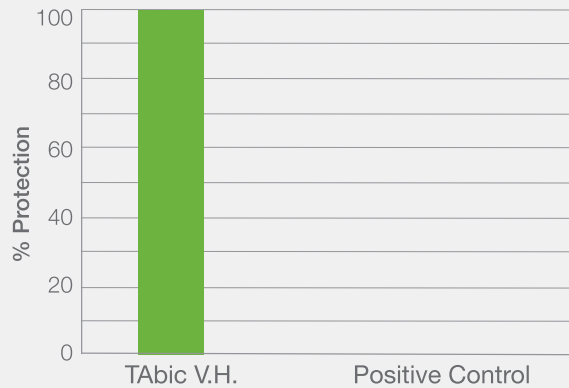
In a recent challenge study, the protection induced by **TAbic V.H.** vs. the Chimalhuacan strain of the NDV was carried out in Mexico (2019) at the facilities of the Secretaria de Agricultura y Desarrollo Rural (SADER). The Chimalhuacan strain is one of the two official strains used in challenge studies to assess the Newcastle live vaccines protection in Mexico. The Chimalhuacan is a velogenic, viscerotropic strain and has one of the highest ICPIs in the world (1.94).

In this study, 20 SPF chicks of two weeks of age were randomly divided into two groups of ten chicks each. The first group was identified as a positive control group and did not received any vaccine. The second group was identified as a test group and was administered one dose per chicken of the **TAbic V.H.** vaccine.

Fifteen days after the chicken's vaccination, both groups were challenged with a 0.2 mL intramuscular injection of the velogenic viscerotropic Chimalhuacan strain with a titer of 10<sup>6</sup> EID50%/ mL. The administered dose was enough to kill or sicken at least 90% of the challenged birds. After the challenge, the birds were observed for 14 days, registering the clinical signs and deaths. The test is considered satisfactory when 90% of the vaccinated chickens stay alive, and do not show signs of Newcastle Disease and 90% of the positive control group chicks die or shows signs of Newcastle Disease (Figure 1).



**Figure 1.**  
Protection (%) vs. the NDV Chimalhuacan strain



In this study, 100% of the chickens vaccinated with **TAbic V.H.** survived and did not show any clinical signs of the disease.

The challenge was validated since the conditions previously described for the positive control group and the test group were met.

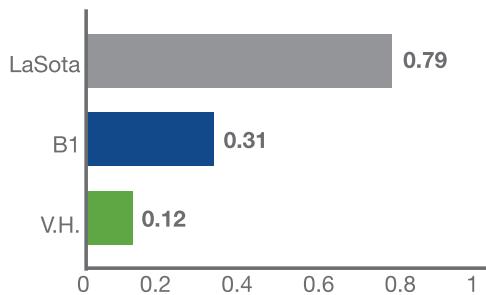
TAbic V.H. has been proven to provide solid protection against different field viruses, in different conditions, with the added advantage of offering a post vaccination reaction using the respiratory stress index that is lower than the one associated to the LaSota strain (Figure 2).

*Respiratory Stress Index. Dr. W.H. Allan CVL Weybridge, UK (1979):*

10 SPF chicks, 7 days old, were vaccinated with  $10^{5.3}$  EID<sub>50</sub> per bird.

**Figure 2. Score grades:**

0 = Normal | 1 = Sneezing | 2 = Depressed | 3 = Sick | 4 = Dead



More than five billion doses of the **TAbic V.H.** vaccine are sold annually and used to protect broilers, layers and breeder flocks in high prevalence Newcastle Disease countries such as Indonesia, South Africa, Thailand, Israel, Turkey, Vietnam, and India. It is now available in Mexico.



## More about Newcastle Disease

Newcastle Disease etiological agent has recently been reclassified as an *Orthoavulavirus* 1, member of the Avulavirinae family, however, the World Organization for Animal Health (OIE) still refers to it as an Avian Paramixovirus -1 (APMV-1) or Newcastle Disease Virus (NDV). To be consistent with the new classification, we will refer to it in this bulletin as an *Orthoavulavirus* 1 or NDV.

Despite all the isolations of the *Orthoavulavirus* 1 belonging to the same serotype, antigenic variations between different isolations have been identified. It has been proven that even well characterized isolations in the same group such as LaSota, B1 and V.H. can vary antigenically. In other words, two LaSota strains can express antigenic variations between them. Even cloned vaccines may express a different antigenic immunogenicity.

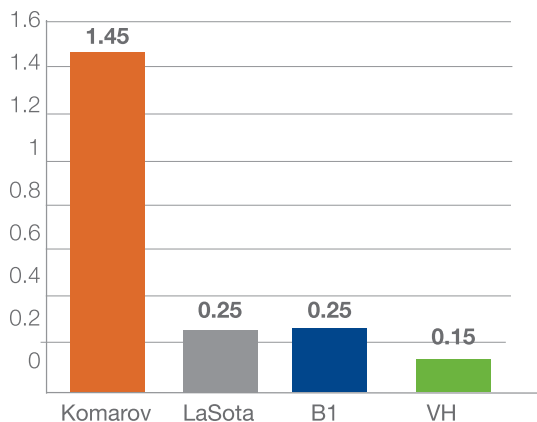
Another common way to classify the NDVs is based on the clinical signs observed in chickens after experimental inoculation. These pathotypes describe the NDV virulence in decreasing order from the hottest to the mildest viruses and are grouped as: velogenic, mesogenic, lentogenic and asymptomatic enteric. Velogens are divided into two subgroups: viscerotropic velogenic vvNDV (causes hemorrhagic lesions in the gastrointestinal track and often creates neurologic effects) and neurotropic velogenic nvNDV (produces neurological signs with some respiratory involvement).

These pathotypes can also be grouped by their mean death time in chicken embryos after allantoic sac inoculation. Velogenic viruses induce the chicken embryo death in less than 60 hours, Mesogenic viruses between 60-90 hours, and Lentogenic strains in more than 90 hours after inoculation.

The Intracerebral Pathogenicity Index (ICPI) is another commonly used technique to differentiate lentogenic viruses with values below 0.7 from virulent mesogenic strains with values above 0.7 and less than 1.5, and from velogenic viruses with an ICPI greater than 1.5. In the ICPI testing, birds are rated 0= Normal, 1= Sick, 2= Dead. The ICPI is the mean score per bird observed during a period of eight days. Thus, the highest ICPI score achievable is 2.0, which is used for the most pathogenic strains of the NDV. Regulations from the European Union directive 93/152/EEC state that viruses used as live NDV vaccines should have an intracerebral Pathogenicity Index (ICPI) of less than 0.4 to 0.5, depending on the dose (Figure 3).

With the evolution of laboratory techniques (NJ,

**Figure 3. Intracerebral Pathogenicity Index (ICPI)**



ML, and Bayesian method), new techniques are being adopted to differentiate the ND viruses based on their phylogenetic analysis of genome sequences. Based on these techniques, it has been concluded that selection and inherent error rate of the viral RNA polymerase are believed to be the main drivers of the evolution and diversity of NDV (Diel, et al. 2012). NDV shows low rates of recombination, but considerable antigenic drift over time, the genetic diversity is represented by lineages or genotypes. Genotypes are classified in two classes, class 1 includes only 1 genotype, while in the class 2 there are XX different genotypes. All class 1 viruses have been rooted to the oldest class 1 NDV isolate, EF564833/Canada Goose/USA (OH)/78/1987. The existence of a single genotype was confirmed.



# Technical Bulletin

Information from Phibro Technical Services

Class 2 was classified based on the ML method and is more diverse than class 1, containing non-virulent and virulent viruses. The complete analysis identified 20 genotypes, (I to XXI, genotype XV was excluded). Class 2 includes all pathogenic NDVs. Depending on the geography, the prevalence of the different genotypes may vary. For example in Asia the most prevalent genotype is the VII, while in Mexico, the most prevalent genotype is V. Peru has reported a genotype XII. NDV from genotype XII was isolated from outbreaks in Colombia, the consulted literature suggested that the viruses from Peru could have moved into the northern part of South America continent (Berhane et.al, 2017)

It is interesting to highlight that based on this new classification, vaccine strains such as LaSota and B1 are now classified in the genotype X (former genotype II).

**TAbic V.H.** is now available in Colombia, Mexico, Brazil, and Argentina. Vaccination against Newcastle Disease helps in preventing the losses from morbidity and mortality associated with the Newcastle Disease. Vaccination is to be used along with good management and biosecurity practices.

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