

When the degree of challenge is high ...

Each degree in performance counts

**F Strain - Mild Asymptomatic strain - Ideal for Priming**

- Provides local immunity; blocks nasal and ocular route for field virus
- Minimizes problem of CRD and E.coli infection; No post vaccinal complications
- Delivers unparalleled Efficacy, Safety & Consistency

**LaSota - An Ideal Booster**

- Boosts the immunity of chickens previously primed with 'F'
- Imparts local immunity in intestinal tract; induces active immunity
- Ensures effective protection in the presence of maternal antibodies

**R2B - A Must for Indian Poultry**

- Protects in high ND challenge Indian conditions
- Provides good and durable immunity against vvND because of being more invasive
- Achieves high ND titers; ensures better protection in growers

**Encivax (Inactivated) - Imparts Prolonged Immunity**

- Boosts the immunity of laying flocks previously vaccinated with live vaccines
- Maintains titer at high levels for sustained production
- Ensures high titer levels in Breeders resulting in high maternal antibodies in the progeny



**INDOVAX ND vaccines continue to perform and play a leading role in the effective control of Newcastle disease in India**



## Benefits of Serological Monitoring of Poultry Flocks

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Most poultry producers spend a significant amount of both time and money vaccinating their flocks and implementing biosecurity programmes for protection against economically devastating diseases. But how good is this protection? Do you wait to see if there is a disease outbreak, or do you screen your birds serologically to design an appropriate vaccination schedule and to determine exactly how well the vaccination has performed?

### Serological monitoring

When a chicken is vaccinated or exposed to a disease, it responds by producing antibodies against that specific disease organism. Serological monitoring allows a producer to estimate the quantity of antibodies to a specific bacterial or viral antigen present in particular serum. Serological examinations are of major importance for developing vaccination schedules, monitoring vaccination response and to detect field infections in poultry flocks. The information provided by serological monitoring has proved to be so beneficial that more and more poultry producers are making it as an essential part of preventive medicine programme.

### Commonly used serological tests

Qualitative tests

#### Rapid Plate Agglutination test (RPA)

Rapid test to detect antibodies against Mycoplasma (Mg and Ms) and various types of Salmonella

#### Agar gel precipitation test (AGP)

Simple method to detect antibodies against various

viruses like Adenovirus (IBH or Leechi virus) and Marek's disease virus.

Quantitative tests

#### Hemagglutination inhibition (HI)

The HI test is an easy, rapid and cheap method for the detection as well as quantification of antibodies against the viruses that have the ability to agglutinate red blood cells of the chicken i.e. ND, AI and EDS

#### ELISA

The ELISA technique is universally accepted within poultry industry as most reliable serological monitoring tool. Commercial ELISA tests are available for the most important viral and bacterial infections of poultry (IB, IBD, ND, AI, AE, ALC, CAV, REO, REV, Mycoplasma, Pasteurella, Salmonella etc). ELISA tests are rapid method to test large number of samples and from one single serum dilution antibodies against different agents could be tested.

In ELISA, the level of antibodies present in the blood are measured and expressed as titre values. Titres are calculated end point dilutions at which the sample would be positive. Any interpretation of results must include the mean titre i.e an average of titres of flock and the coefficient of variation (CV), which indicates variation in titre levels throughout flock.

Also it is important to consider the ELISA as flock monitoring tool and not to test individual bird.

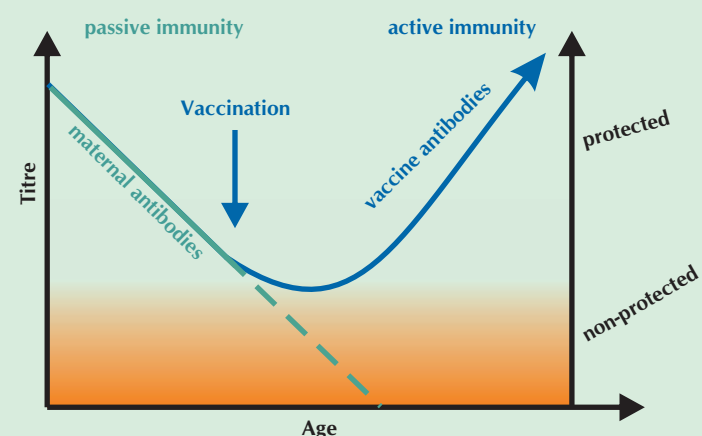
Moreover, ELISA software has the ability to present individual or grouped flock titre information in both graphic and numerical formats, which in turn facilitates the data analysis. The advantages of ELISA over other serological assays include its sensitivity, specificity, quick processing time of multiple samples, its objectivity, reproducibility and computer generated versatile database.

### **Beneficial applications of Serological monitoring**

1. Determination of age of chick vaccination
2. Evaluate and improve vaccination programs
3. Routine serological screening of flocks
4. Diagnostic serology
5. Disease surveillance programme

#### ***Determine age of chick vaccination***

The purpose of testing during the first week is to determine the quantity of maternal antibodies the chicks received, and thus optimum time for first vaccination. Maternal antibodies can interfere with the expected immunological response to vaccination. Accurate prediction of the decline in maternal antibody can help producers decide when to vaccinate (fig 1). This helps to insure a good vaccine take as well.



#### ***Evaluate and improve vaccination programs***

Serological testing is a major tool for monitoring the efficacy of vaccination, which in turn helps in updating vaccination programs regarding vaccine strains, day of vaccination, adding a booster, changes in vaccine administration methodology, etc.

It is most useful to determine titres both before vaccination and 3-4 week post vaccination to demonstrate the actual vaccination response.

The goal of any vaccination programme should be to achieve uniform post vaccinal titre values for each vaccinated flock. Uniform titres right at protection threshold indicate optimal vaccination. Improper administration of vaccines has been shown to increase the CV in the flock.

Interpretation of serological results depends on the test system used, age and type of birds, vaccination history, time after vaccination and route and type of vaccines used. For example, killed virus vaccines usually produce the highest and long lasting titres.

#### ***Routine serological screening of flocks***

Serological screening of flocks is recommended on routine basis (every 5 to 6 wks) to determine the antibody titres and immune status of flocks against important diseases like ND, IB, IBD, AI, CIA, EDS, Mycoplasma, Pasteurella and Salmonella. Changes in flock data as testing continues will flag potential problems that may be developing in particular farms or broiler complexes, hence helps in updating the biosecurity measures. Using the ELISA as tool for monitoring populations requires the testing of flocks at various ages using a statistically valid number of samples. Also samples should be randomly collected and representative of the flock.

#### ***Interpretation of serological results***

Serology results must be interpreted in association with other sources of information i.e. vaccination history, production data, condemnation data, clinical signs and necropsy findings. Again, titres due to field exposure should not be confused with vaccine-induced titres. Analysing data carefully based on vaccination history can help differentiate between two.

#### ***Diagnostic serology***

A serological test procedure, if available is the most rapid and economical method for diagnosis of diseases like CIA, REO, AE, ALC, REV. Other diagnostic procedures such as virus isolation, histopathology and molecular biological examinations (e.g. PCR techniques) are less economical to perform, in expenditure of both time and money. Conclusion can be made for diagnostic purposes only if we know which direction the titres are moving. The direction the antibody titres are going is determined by comparing two sets of serum samples taken over a 3 to 4 week time span. If titres are rising, this indicates exposure to disease.

#### ***Disease surveillance programme***

Serological surveys form an integral part of large scale disease (recently for AI) surveillance programme as large number of samples can be screened using ELISA and only the antibody positive farms are focused for further isolation work.

#### **Conclusion**

It is certain that careful serological monitoring can provide the poultry producer with the information he or she needs to identify and manage flock health problems effectively, hence contributing to improved performance and profitability.

**Indovax** offers Sero-monitoring services to the Indian poultry industry. The Technical services team of Indovax endeavors to provide most reliable, efficient, precise and accurate serological testing procedures leading to correct interpretation of data and valuable information. Indovax offers its services to large scale breeding operations to screen their flocks and advice on scheduling vaccination of chicks supplied by them.