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R.N.I. 71668/1999

Title Code HARBIL00563

Vol. 24 | No. 03 | March - 2022

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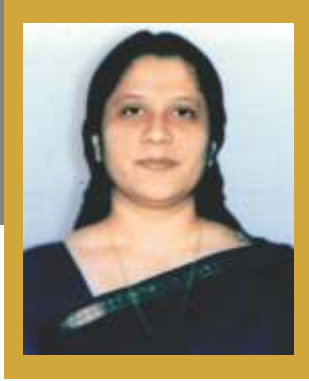
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# From the Editor's Desk



## Vaccination Needs in Poultry

The government's main focus for Budget 2022 focused on increasing productivity in the poultry sector. The decrease in farm credit has led to open opportunities for providing poultry animals needed for vaccination, and vaccination in poultry animals has become the need of the hour.

Vaccination can produce a long-lasting immunity and uniform production function through proper planning and schedule in poultry animals. The sensitive nature of vaccination for poultry requires adequate administration and attention. The allocation of budget towards increasing the availability of vaccination facilities helps reduce the mortality rates and boosts immunity in poultry animals. The boosted immunity helps in increased production and reproductive health.

To educate poultry owners on the importance of vaccination, the government has introduced several schemes to encourage vaccination. The government of India has also come forward with several programs amongst the weaker class to promote vaccination in poultry and make avail regular vaccination at subsidized rates.

Strategy implementation of wise usage of budget amount can be done through diverse and mass poultry animals' vaccination programs to integrate the community. Also, training and social awareness for addressing poultry health can tenfold help deliver vaccines throughout the poultry industry.

On a central front, various state measures to improve the poultry animal vaccination can be taken. The need for qualified animal vaccinators, training for animal vaccinators, and adequate infrastructure for transportation and storage of vaccination shall be looked forward to in coming age. A proper solution must be implemented to ensure poultry animal health and well-being. The availability and utility of vaccination in poultry animals can improve overall biosecurity.

Animal vaccination is an integral component of the Livestock Health and Disease Control sector. The trajectory to improve overall poultry health shall be one of the foremost aims for increasing productivity.

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- Publication of news, views of information is in the interest of positive poultry industrial development in India. It does not imply publisher's endorsement.
- Unpublished material of industrial interest, not submitted elsewhere, is invited.
- The submitted material will not be returned.
- Publisher, Printer Mrs. Bhavana Gupta on behalf of Pixie Publication India (P) Ltd. Karnal Printed at Jaiswal Printing Press, Railway Road, Karnal
- Published at : C/o OmAng Hotel, Namaste Chowk, Near Janta Petrol Pump, KARNAL - 132001 (Haryana) INDIA
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**Christophe Bostvironnois**DVM – Chr. Hansen, Hoersholm,  
Denmark Roland Koedijk, PhD**STRAINS MATTER:  
Selected combinations is the  
key to a successful solution**

Bacteria were first observed and described by Antonie van Leeuwenhoek in 1676 when he published his observations in a series of letters to the Royal Society.

Now, centuries later it is estimated that there are approximately 1 trillion microbial species on earth – a diverse population with major differences between them. If you would compare this number to all plant and animal species combined (approximately 10 million species), then we can conclude that we live in a bacterial world.

Everywhere around us we are surrounded by bacteria. Humans and animals have an interesting relationship with bacteria. For instance, we rely on them as bacteria help us with the digestion of fibres in our intestinal tract – fibres that we cannot digest ourselves.

Mammals rely on microbes to digest these for them instead. There is a clear mutual benefit in this relationship.

On the other hand, we also might fear them as some microbial species can be pathogenic and can cause diseases. It all depends on the species and strains of microbes. Strains matter.

Microbes (like all species) are described in different levels from Domain, Phylum, Class, Order, Family, Genus down to Species. In Table 1 the classification steps are shown for bacteria (left) and for humans (right).

Scientific classification	<i>Bacillus subtilis</i>	<i>Homo sapiens</i>
Domain	Bacteria	Animalia
Phylum	Firmicutes	Chordata
Class	Bacillus	Mammalia
Order	Bacillales	Primates
Family	Bacillaceae	Hominidae
Genus	Bacillus	Homo
Species	<i>Bacillus subtilis</i>	<i>Homo sapiens</i>

Table 1. Classification steps for bacteria and humans.

In the human case it ends with Homo Sapiens at species level. However, the same steps take the bacterial definition

down to *Bacillus subtilis* level, while there is a bigger variety of microbes than people in a species level. Providing microbes with a strain code makes it possible to identify which *Bacillus subtilis* is being referred to.

Microbe strains and their characteristics differ significantly from each other within a species level.

Within *Bacillus subtilis*, there can be thousands of different strains which can be considered as unique individuals. Strains can be considered as individuals within a population.

Consequently, a colony of strains is then like a clone population of the same individual.

A strain is a subtype of a microbial species with:

- Unique genetic identity
- Distinctive morphological, biochemical and behavioural features

For instance, the bacterial species *Bacillus subtilis* consists of more than 1,000 strains that are recorded in international strain banks. In contrast: the 250 cattle, 190 dog, and 65 chicken recognised breeds together are not close to the 1,000 *Bacillus subtilis* diversity within one species. A few examples are provided to highlight some of the diversity found within *Bacillus subtilis*.

**Example 1****Enzyme production characteristics of *Bacillus subtilis***

Cellulase and xylanase are two fibre degrading enzymes needed to break down cellulose and hemicellulose, respectively. Their activity varies exponentially across different *Bacillus* strains.

*Fig. 1a. Cellulase and xylanase level produced by four Bacillus subtilis strains as identified by their strain code (modified from Larsen et al. 2014).*



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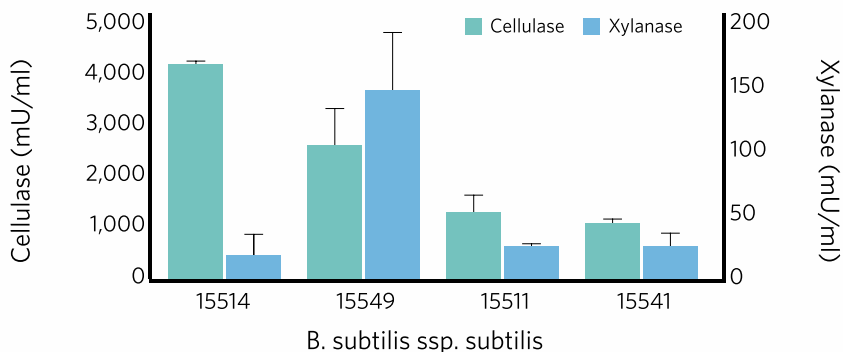
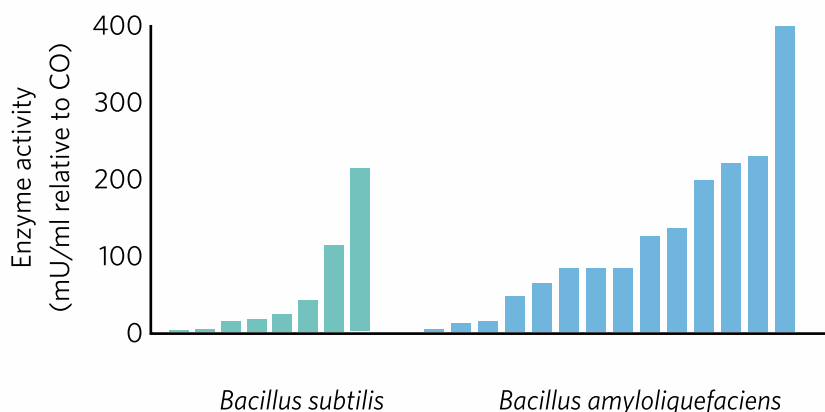


Fig. 1b. *Bacillus subtilis* and *Bacillus amyloliquefaciens* strains with their xylanase activity.

genetic divergence for most of the function, from 16% for metabolism of amino-acids to even 66% of divergence



Bacillus strains differ significantly within the *Bacillus subtilis* group in terms of cellulase and xylanase activity. This shows that not all *Bacillus subtilis* will therefore have the same effect when fed to an animal as a probiotic.

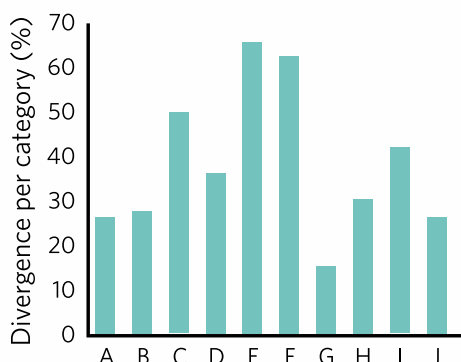
### Example 2

High genetic diversity within *Bacillus subtilis* In the same category or function, genes of the same strain or species can be identified as divergent if their expression would lead to a different outcome.

The number of genes associated with different category groups and the levels of total divergence among a certain strain identify diversity can be evaluated by genotyping. In Fig. 2, 17 different *Bacillus subtilis* were genotyped (Earl et al. (2017) in order to understand the level of genetic similarity for a certain function.

Fig. 2. Level of genetic divergence between 17 *Bacillus subtilis* strains (modified from Earl et al., 2017).

Traits crucial for the survival of the strain were identified such as: cell wall production, metabolism, germination, etc. We can see a very high diversity of



for anti-microbial peptide production.

### Example 3

#### Pathogen inhibition activity

To test inhibitory effects against *Salmonella heidelberg* an in vitro pathogen inhibition test was conducted in Denmark (EXP-18-AH5439).

*Salmonella heidelberg* was plated in agar and *Bacillus* strains were inoculated to see their inhibitory effects to this pathogen. Inhibition zones were measured. The inhibitory activity of different *Bacillus subtilis* strains against the pathogenic bacteria *Salmonella heidelberg* varies greatly. Some *Bacillus* strains have no effect on *Salmonella* inhibition, while others do.

In Fig. 3, we can visualise the pathogen inhibition effect of some *Bacillus* strains from Chr. Hansen bank of strains vs other *Bacillus* strains present on the market.

Fig. 3. *Salmonella heidelberg* inhibition by different *Bacillus* (*Chr. Hansen Animal Health Innovation*). Products were diluted in peptone saline diluent. Product suspensions were added to 'hedgehog' plate. 1,2,3 = inhibition, 4-12 = no inhibition.

### Conclusion

Assessing bacterial genetic diversity is critical for strain identification. Selecting and differentiating strains is the basis for success as different strains all have unique properties. When the right strains are selected for the right target solution they can be an effective solution to counter major food and health challenges.

There is not one strain that is effective against each problem. It is a matter of selecting the right strains or combination of strains for the right objective.

Chr. Hansen recently selected three *Bacillus* strains in a new product for the poultry market: **GALLIPRO® Fit**. The

- A: Total
- B: Unknown
- C: Protein folding
- D: Regulation of RNA synthesis
- E: Anti-microbial peptide production
- F: Metabolism of sulphur
- G: Metabolism of amino acids
- H: Binding proteins and lipoproteins
- I: Germination
- J: Cell Wall

foundation was the selection and combination of strains that were most effective for the poultry industry. The strains were selected due to their strong pathogen inhibition and enzyme production abilities.

Strains matter. Selected combinations of strains is key to a successful solution from which poultry farmers can benefit.



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# Vaccination in Broiler and Layer

**Bhavana Gupta**

Editor-in-Chief

**Priyanka Patlan**

Co-Editor

“Vaccination programs in poultry are need of the hour, and vaccination in broilers and layers is essential to curb the outspread of deadly diseases causing consequential economic loss. It is estimated that disease outbreaks in non-vaccinated flocks are higher than the vaccinated ones. To avoid the potential threat, due consideration needs to be given to the vaccination of flocks.”

## Methods of vaccination used by poultry industries:

- **Eye drop or Nasal instillation method**

This method is usually used for small doses early in chicks. The benefit that the Nasal instillation method offers is a higher immunity than the other methods. The chicken inhales the vaccine drop through nasal instillation by pressing its beak momentarily.

- **Injection method**

Injection methods are usually used for inactivated vaccines. This method includes injecting vaccines through a thin, sterile needle in the muscle of flocks.

- **Oral vaccination**

Oral vaccination is usually given through drinking water. This method is generally adopted when the vaccination flocks are extensive and where mass vaccination is needed.

Proper and timely vaccination is the most significant part of good poultry management tactics. Vaccination enables good poultry health and immunity. It also prevents the spread of harmful diseases in broilers and egg-laying flocks, promoting optimal

performance and production. The timeline and schedule for vaccination also play a significant role in reducing the mortality rate in broilers and layers.

## Insight on Vaccination schedules for broilers and layers

- Marek's disease is the most common infection in broilers and layers, and vaccination is provided on day 1 of the hatchery by injecting it on the back of the neck.
- The booster vaccine for Newcastle disease and infectious bronchitis is given within 2 weeks, usually through water or spray and after 4 weeks of hatching.
- The vaccine for Infectious bursal disease is given to broilers within 18-21 days of hatch if its maternal antibody is low through the drinking water method.
- Fowlpox and Avian Encephalomyelitis vaccine dosage are given within 6-8 weeks of hatch through the web wing jab method.
- Coccidiostat vaccine is given on day 14th of the hatch through the water drinking method.
- Infectious coryza, a type of killed vaccine, and EDS-76 are given within 3 weeks of hatch through the water drinking method.





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- Laryngotracheitis vaccine is given on the 16th week of the hatch through spray or eye-drop.
- ND + IB + EDS is a three in one vaccine given on the 17th week of the hatch through intramuscular injection.

#### **Administrative precautions to be taken during vaccination**

There are pretty many handy precautions to be taken by poultry industry owners for ensuring smooth vaccination programs. Some preventive measures are listed herein:

1. Anti-stress medication needs to be given two days before and after the vaccine.
2. Sick layers and broilers should not be vaccinated. It shall be known that vaccines are a preventive measure and not a cure.
3. Vaccination dosage instruction needs to be followed for storing, handling, and administering the vaccine.
4. Clean equipment needs to be in place.
5. The vaccination needles shall be sterile and replaced after a particular dosage.
6. Trained management staff for poultry vaccination program shall be in place.
7. Transportation of vaccines shall be in coolers to keep a constant temperature.
8. For water-based vaccination methods, care needs to be taken for the distribution of vaccines adequately.
9. All records of vaccination shall be kept across in a safe place.
10. The volume of water is necessary for water-based vaccination, and therefore adequate ratio as per instructions given on vaccines needs to be adhered to.
11. Vaccination shall be as per its schedule only, and there should be no delay.

Vaccination is a tool that can benefit poultry at large, and it can enhance quality and production in broilers and layers and cater to bringing down the mortality rates. Therefore every industry needs to take care in following proper vaccination procedures.



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#### Clostridium Perfringens

Type A, C, B, D, E

#### Staphylococcus Aureus



# Lameness In Poultry

Lameness is a problem in commercial chicken, both Broiler & Layer and poultry producers & farmers are clueless about its reason and control. Today's chicken has huge genetic potential and are meant for fast growth in broiler and almost one egg every day. The major constraints of poultry productions today are Awareness about the Need of today's Chicken to reach Genetic Potential Targeted Production, Feed Raw material Cost & Biosecurity. I strongly feel the reason of Lameness lies within these constraints only and I tried to discuss about them point wise in this article.



**Dr. B C Dutta**

Poultry Consultant [www.drbc Dutta.com](http://www.drbc Dutta.com)  
YouTube: PoultryTroubleshooter\_BDutta

## Factors Contributing Lameness

### A. Non-infectious:

#### 1. Nutritional imbalance

- i. Calcium Phosphorus Imbalance
- ii. Vitamin D Deficiency
- iii. Vitamin B1 Deficiency
- iv. Biotin Deficiency
- v. Vitamin B12 Deficiency
- vi. Zn Deficiency

#### 2. Toxicity: Coccidiostat Ionophore Toxicity

#### 3. Mycotoxin: Deoxynivalenol (DON) toxicity

#### 4. Poor Management: Poor Bedding (Litter condition) material

### B. Infectious

#### 1. Bacterial

- i) Bacterial Chondronecrosis by Enterococcus cecorum, Streptococcus spp, Staphylococcus spp & E coli
- ii) Vertebral Osteomyelitis/ Spondylitis /Kinkyback due to - Enterococcus cecorum, Staphylococcus spp & E Coli
- iii) Bumble Foot Disease or Pododermatitis or Foot Pad Dermatitis by Staphylococcus spp
- iv) Fowl Cholera

- v) Infectious Synovitis

### 2. Viral

- i) Tenosynovitis/ Viral Arthritis
- ii) Marek's Disease (MD)
- iii) Avian Encephalomyelitis (AE)
- iv) Ranikhet Disease (ND or RD)

## Calcium phosphorus imbalance

### Contributing factors:

- Available Calcium & Available Phosphorus Ratio in Feed
- Excess or shortage of anyone can affect utilization of other

### Symptoms

- Rickets in young chicken; both Broiler & Layer
- Osteomalacia (Fragile soft bone) & Osteoporosis (Porous or spongy bone) in Laying Hens

### Treatment & control

- Management of Age-wise Available Phosphorus & calcium Ratio in Feed
- Quality assessment of RM like DCP, MCP & MBM before use

## Vitamin D deficiency

### Contributing Factors

- Zero access to Sunlight for commercial birds in captivity



# Balance is Important

- Prevention from the heat stress
- Maintain Optimum dEB
- Promote growth & development
- Protect dehydration & stress
- Heat stress makes birds more susceptible to
  - Coccidiosis
  - Mycotoxicosis Disease etc.



## ZEACTIVE<sup>Vet</sup> Electrolyte Powder



**Dosage :**  
1-2 g/Liter of drinking water  
or 500g/tonne of feed  
(Inclusion may vary as per the environmental condition  
or as directed by the veterinarian/nutritionist)



Formerly Known as Veterinary Division of  
Caldic Pharmaceutical Limited

- Poor Gut Health heavily affects absorption of Fat Soluble Vit D
- Damage Kidney & Liver can't convert Vit D to metabolizable form to be used in the body

### Symptoms

- Muscle Weakness leading to lameness
- Pain & Fatigue
- Depression

### Treatment & control

- Gut Health Maintenance is the basic principle to prevent lameness due to Vit D deficiency because poor gut health affects vitamin D utilization heavily.
- Vit D3 level in first (PBS or BS) shall be 4000 – 5000 IU

### Vitamin B1 deficiency

#### Contributing factors

- Feeding medicated starter feed containing Amprolium to chicks.
- Breeding parents deficient in Thiamine
- Poor feed intake
- Reduced absorption due to poor Gut Health
- Consumption of Fusarium mycotoxins in feed

#### Symptoms

- Leg Weakness
- Ataxia
- Tremor
- Unsteady Gait
- Paralysis of legs, wings & neck
- Walking on Hocks
- Star Gazing attitude

#### Treatment & control

- Gut Health Maintenance to improve Vitamin absorption
- Control of Mycotoxin in Feed
- Avoid Amprolium in first feed
- Water Vitamin supplementation for 5 – 7 days help minimizing losses

### Vitamin B12 deficiency

#### Contributing factors:

- Intestinal Malabsorption: Includes gastrointestinal conditions affecting the chicken's small intestine.
- Decreased stomach acid production:

Provides an ideal environment for the overgrowth of anaerobic bacteria in the bird's stomach, which further interferes with vitamin B12 absorption

- Vitamin B12 deficient feed formulation

#### Symptoms

- Nervous system Impairment with Leg Weakness & Perosis
- Stunted Growth
- Loss of Appetite
- Poor Feather

#### Treatment & control

- Gut Health Maintenance
- Supplement through Feed
- Emergency water supplementation for few days

### Biotin deficiency

#### Contributing factors

- Corn, Soya or Wheat are very poor source of Biotin and hence every care to be taken to maintain its requirement through synthetic source
- Use of sulpha drugs, such as Sulphathalidine
- Feeding birds with Mold contaminated feed

#### Symptoms

- Poor Growth
- Leg Weakness
- Thickened foot pad
- Chondrodystrophy
- Fatty Liver Kidney syndrome

#### Treatment & control

- Avoid feed with Mold contamination
- Avoid unnecessary use of Sulpha drugs
- Compulsory Supplement through Feed
- Emergency water supplementation for few days

### Manganese deficiency

#### Contributing factors

- Unbalanced Diet
- Seed based Diet
- Poor Gut Health leading to poor absorption

#### Symptoms

- In young chicks slipped tendon or perosis, characterized by swelling and flattening of the hock joint, along

with subsequent slipping of the Achilles tendon from the condyles.

- One or both of the chick's legs may be affected.
- The tibia and tarsometatarsus may be bending closer to the hock joint, and may demonstrate lateral rotation.
- The long bones of the chick's legs and wings may also be shorter and thicker

#### Treatment & control

- Provide additional supplements of manganese (Mn) in order to ensure total intake of 60 mg/kg Feed in a balanced diet
- Don't provide chicks additional calcium until they start laying eggs in layer
- Emergency use of Water medication will help reduce the loss

### Ionophore toxicity

#### Contributing factors

Monensin @ 120ppm or above is toxic to Broiler and careless use of excess dose results toxicity

#### Symptoms

- Reduce Feed Intake
- Characteristic paralysis in which the legs are extended backward

#### Treatment & control

- Control on Dose in Premix
- Do not use Monensin over 3 months continuously

### Don (deoxynivalenol) toxicity

#### Contributing factors

- Tight Junction Integrity Disruption
- Translocation of bacteria from the intestine through disrupted tight junctions to the femoral head

#### Symptoms

- Ongoing pressure of growth results in micro fractures and eventually degeneration of the joint.
- Lameness

#### Treatment & control

- Avoid Mycotoxin contaminated Raw Materials
- Avoid Mycotoxin build up in finished Feed

### Pododermatitis or foot pad dermatitis or bumble foot disease

#### Contributing factors

- Causative bacteria are



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Staphylococcus spp

- Hard, muddy, flooded, uneven or rough floor surfaces
- Damp or unsanitary bedding (Litter)
- Vitamin A deficiency
- Overweight, Lack of activity
- Excessive activity due to fighting among flock members
- Excessive accumulation of faeces on Litter

### Symptoms

- Bumblefoot is a common inflammatory condition affecting the bottom of the chicken's foot; footpad & toes
- The most frequent presentation is a hard, puss-filled abscess of the underlying tissue and structures covered by a brown to black coloured scab
- The ulcers can cause swelling, redness, and heat under the skin and cause the surface area to thicken.
- Often, a scab or crust will cover the lesion.
- As the severity of the infection increases, so does the pain, and chickens are often reluctant to walk and/or appear lame.
- The situation helps entry of secondary bacterial infections

### Treatment & control

- Concrete or hard muddy floor with even surface
- Clean, light & soft litter material
- Litter Thickness as per season & Body Weight Target
- Proper Ventilation
- Humidity control



- Gut Health Maintenance
- Emergency Removal of Litter material and New Bedding material placement
- Antibiotic Treatment considering the morbidity & degree of infection

### Bacterial chondronecrosis

#### Contributing factors

- Responsible Bacteria are Enterococcus cecorum, Streptococcus spp, Staphylococcus spp, & E coli
- Rapid growth Rate during 1st 4 weeks combined with inappropriate Nutrition support
- Poor Gut Health
- Poultry House Environment Hygiene under question

#### Symptoms

- Chondronecrosis is caused by bacterial infections in sites prone to microfractures such as Proximal femoral, Tibial growth plates, Articular Cartilage and flexible thoracic vertebrae. The infection reaches the growth plate via the blood stream after getting entry through GI or respiratory route.
- Restriction of Movements
- Poor Feed Intake & Poor Growth
- Significant Mortality due to starvation in 3–4 days
- Post Mortem examinations reveals large abscesses on the femoral head, tibial head & on vertebrae

#### Treatment & control

- Proper Nutritional Balanced diet
- Gut Health Maintenance
- Good house hygiene
- Antibiotic Treatment considering the bacterial spp
- Good Litter condition throughout the flock
- Proper Ventilation to control Humidity in closed EC shed.

### Vertebral osteomyelitis or spondylitis or kinkyback

#### Contributing factors:

- Kinky-back is defined as the ventral dislocation of the anterior end of the articulating 4th thoracic vertebrae.

- The 4th thoracic vertebrae rotates the posterior end, causing it to pinch the spinal cord. The damage to the spinal cord causes paralysis in the bird.
- Chickens with kinky back syndrome are often seen sitting on their tail, extending their feet outward or letting them fall over to one side of their body.
- Once the condition stops birds from being able to walk, they are unable to reach food or water on their own, and are at risk of dying from starvation.
- Heavy, meat-type broilers are more prone to developing this condition, as a result of rapid growth.
- Females are more at risk than males.

#### Symptoms

- Typically starts from day 22, bird will be sitting on its breast/keel, with the legs directed forward, posterior paralysis due to spinal cord compression.
- Arched Back
- Extending Neck outward
- Using Wings to assist walking
- Hock sitting posture
- Lameness
- Sitting on tail with feet extended
- Falling over sideways
- Abscess and/or necrosis in T4-T7 vertebrae, dorsal buckling of spinal cord (kyphosis), interstitial oedema, atrophy & degeneration of muscle fibres.

#### Treatment & control

- Gut Health Maintenance
- Good poultry house hygiene
- Antibiotic Treatment considering the bacterial spp
- Good Litter condition throughout the flock
- Proper Ventilation

### Fowl cholera

#### Contributing factors

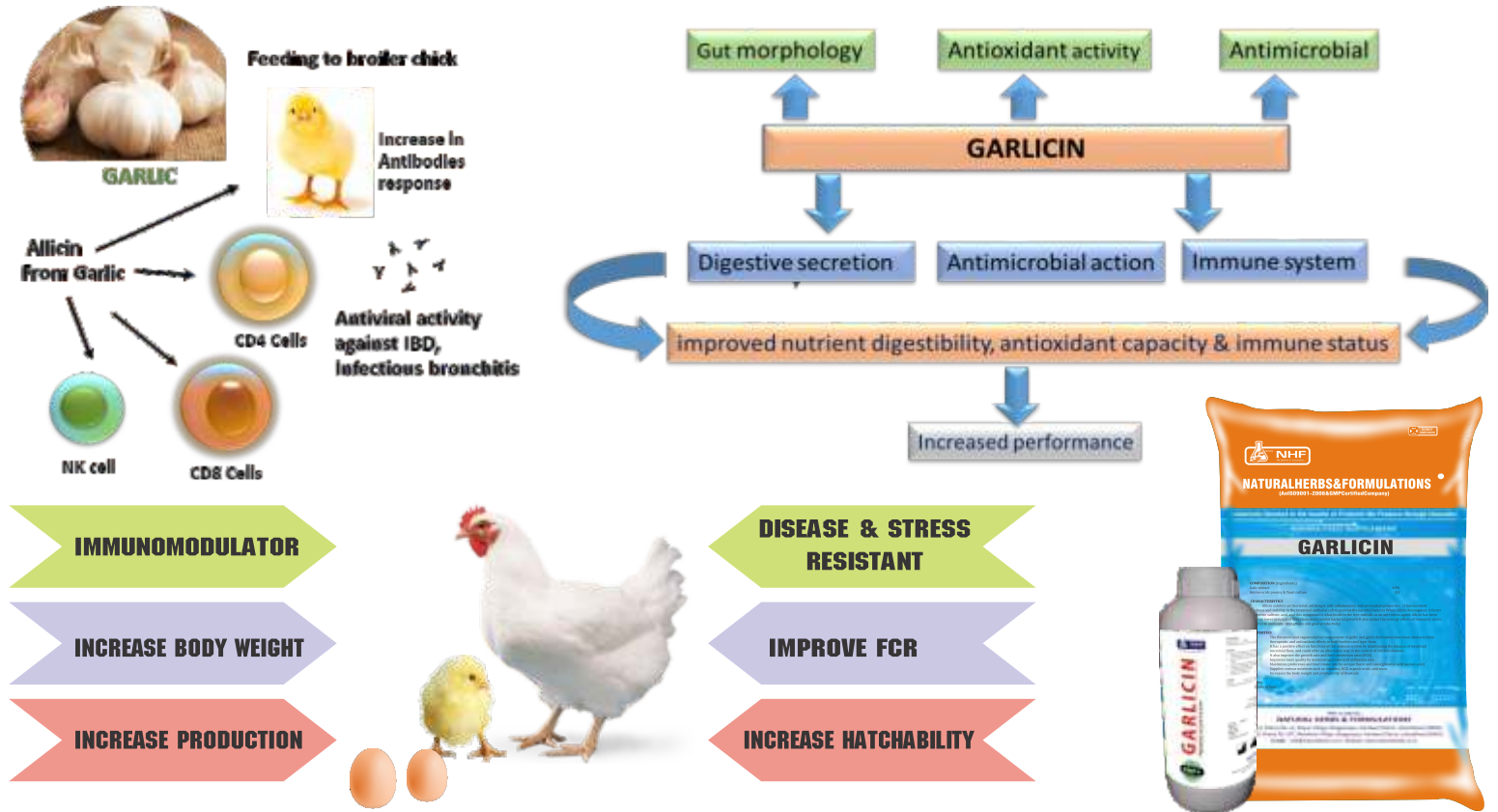
Fowl cholera (FC) is a highly contagious bacterial disease caused by Pasteurella multocida

#### Symptoms

Chronic Form of FC presents as a

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localized infection; swelling, inflammation, and abscess on foot pad & joints causing Lameness.

#### **Treatment & control**

- Tetracycline Inj 5mg/Kg BW, may be repeated after 48 hours
- Multi strain probiotic to support the already disturbed Gut Health
- Immediate Isolation of all infected Birds from the flock

#### **Infectious synovitis or ms infection**

##### **Contributing factors**

An Acute to Chronic disease caused by Mycoplasma synoviae, a world-wide problem now

##### **Symptoms**

- Chickens with infectious synovitis develop swollen, red & warm hock joints and Footpad
- They are in so much pain it is difficult for them to walk resulting Lameness
- Unable to reach the feed leading to poor growth, unevenness in flock and slow mortality.
- The synovial membranes of tendon sheaths are thickened, oedematous, with fibrinous exudates accumulating within and around the tendon sheaths.

##### **Treatment & control**

- Prevention is through Vaccination of Breeder
- Culling of affected Breeder flock as the disease mainly transmit vertically
- Antibiotic Inj like Tylosin @ 20 -30 mg/KgBW helps reducing loss
- Drinking Water treatment with Tylosin, Tyilmicosin or Tylvalosin @ 25 -30mg/Kg BW is effective
- Chlortetracycline may be given through water for effective results to control complicating E coli

#### **Tenosynovitis or viral arthritis or reo disease**

##### **Contributing factors**

- Diff Serotypes of Avian Reovirus
- It occurs predominately in commercial "meat-type" chickens
- Broiler Chicks from Non-Vaccinated Parents are more susceptible

##### **Symptoms**

- Marked swelling of the digital flexor

and metatarsal extensor tendons, which are located just above the hock joint.

- The swelling area usually feels warm to touch.
- The foot pad and hock joint also swollen.
- Once the disease is advanced, the articular cartilage of the joint can completely erode, resulting in chronic tendinitis and rupture of the gastrocnemius tendon.
- At this stage, there is green discoloration of skin & subcutaneous tissues at the site of rupture due internal bleeding; the bird is unable to extend affected foot or put weight on the leg resulting lameness

##### **Treatment & control**

- Vaccination of Broiler Breeder with all available serotype is the best way of protection
- Biosecurity in both Broiler & Breeder farm
- Anti-Viral drug & Immuno-stimulant help reducing losses

#### **Marek's disease or MD**

##### **Contributing factors**

Highly contagious disease developing tumours in the nerve sheath resulting Lameness

##### **Symptoms**

- Enlarged nerves are the most consistent gross lesions in affected birds; Various peripheral nerves, particularly the vagus, brachial & sciatic become enlarged and lose their striations
- Transient paralysis (TD): Vasogenic brain oedema; causes temporary incoordination (ataxia), partial to complete paralysis of the neck or legs, lasting only 1 to 2 days
- One legs straight forward and other back
- Paralysis of legs, wings & neck
- Torticollis, Incoordination
- Reddened Leg

##### **Treatment & control**

- Vaccination of Breeder is the best way of protection
- Vaccination of Broiler Chicks at

Hatchery gives protection after 7 – 14 days

- Biosecurity in both Broiler & Breeder farm

#### **Avian encephalomyelitis or ae**

##### **Contributing factors**

- AE, also referred to as epidemic tremor, is an infectious neurological disease caused by a picornavirus.
- It occurs in young chicken between 1-3 weeks age.
- Chicks from Non-Vaccinated parents are at high risk of developing the disease

##### **Symptoms**

- Seizure like activity
- Spinning
- Ataxia (Incoordination & Stumbling)
- Rapid Trembling of Head & Neck
- Paralysis

##### **Treatment & control**

- Vaccination of Breeder is the best way of protection
- Biosecurity in both Broiler & Breeder farm

#### **Ranikhet disease (RD) or newcastle disease (ND)**

##### **Contributing factors**

ND or RD is a highly contagious Viral disease, causing heavy mortality with symptoms resulting disabilities

##### **Symptoms**

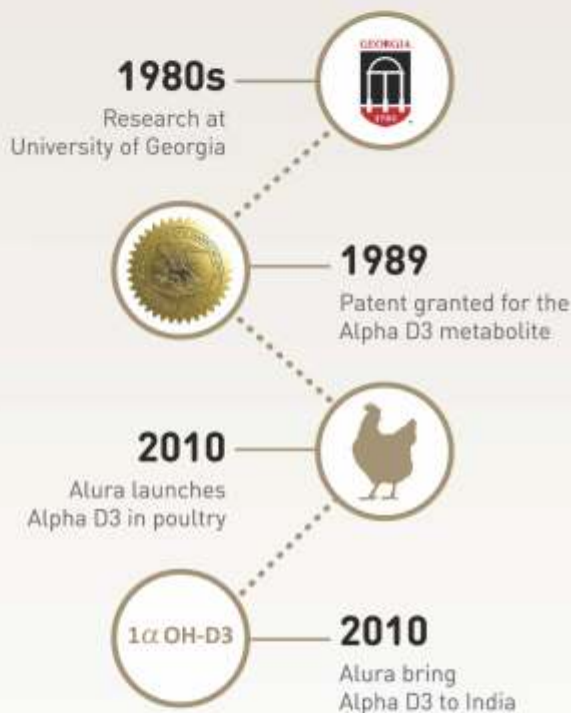
- Uncoordinated (ataxia) walk and movements, where affected birds may be seen stumbling frequently, and appear to lack proper balance.
- Unilateral or bilateral partial or complete paralysis of their legs and wings.
- Head Tremor
- Twisted Neck (Torticollis)
- Convulsion, Circling
- Muscle Spasms
- Lethargy

##### **Treatment & control**

- Vaccination of Breeder is the best way of protection
- Vaccination of Broiler considering the field challenge control ND effectively
- Biosecurity in both Broiler & Breeder farm



# THE ORIGINAL ALPHA D3



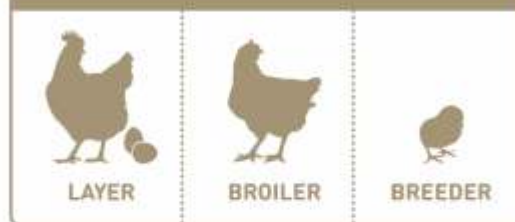
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# Saving Feed Cost by Reformulating Broiler Diets with The Use of Nutrase BXP 200 TS



## Introduction

Nutrase BXP 200 TS is a blend of enzymes, containing endo-xylanase,  $\beta$ -glucanase,  $\alpha$ -amylase and 6-phytase activities. This multi-enzyme complex is developed for production animals to guarantee an optimal digestibility of feed and supply of nutrients to the intestinal microbiota to improve gut health.

## Endo-xylanase and $\beta$ -glucanase.

Arabinoxylans (AX) and  $\beta$ -glucans are important anti-nutritional factors in raw feed ingredients. Their most well know anti-nutritional effect is the increase of viscosity in the intestinal content, making digestion and absorption of nutrients extremely difficult. Also, unfavorable hindgut fermentation is stimulated. The presence of endo-xylanase and  $\beta$ -glucanase in Nutrase BXP 200 TS reduces these anti-nutritional effects of feed ingredients.

## $\alpha$ -amylase.

Starch is the main energy source in cereals for production animals. During starch digestion,  $\alpha$ -amylase and gluco-amylase are produced by the animal and secreted into the small intestines. However, in young animals and during transition periods the endogenous production might be insufficient. In this case, the presence of  $\alpha$ -amylase in Nutrase BXP 200 TS will support the animal to digest starch.

## 6-phytase.

Phosphorous (P) is a key element in all known forms of life. In cereal grains, P is mainly stored in the form of phytic acid or phytate. Monogastric animals are unable to utilize P from phytic acid or phytate, as they lack endogenous phytase. Nutrase BXP 200 TS contains a bacterial 6-phytase that releases phosphate from phytic acid or phytate and increases the availability of a whole range of nutrients (e.g. P, Ca, Zn, Fe, Cu).

The aim of this trial is to investigate the effect of Nutrase BXP 200 TS to a corn-based diet with reduced energy, P and Ca matrix values on broiler performance.

## Materials and methods

A pen trial was conducted in which Cobb 430Y male broilers were reared in a poultry house (AgriVet, India) for 42 days. A three phase dietary program (starter d0-14, grower d15-28 and finisher d29-42) was used in which all diets were fed ad libitum. A total of 180 broilers were randomly allocated to 3 treatments

TABLE 1: DESCRIPTION OF DIETARY TREATMENTS

TREATMENT	DESCRIPTION
Positive control (PC)	Corn-soy-based broiler diet. The diet was formulated according to the nutrition specification of Cobb 430Y without enzyme supplementation
Negative control (NC)	The positive control diet was reformulated to contain approximately 100kcal/kg, 0.14% and 0.12% less apparent metabolizable energy (AME), phosphorous (P) and Calcium (Ca), respectively, without enzyme supplementation
Negative control + Nutrase BXP 200 TS	Negative control diet supplemented with 200 g/ton of feed Nutrase BXP 200 TS



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s-AMe, Vitamin K3, Chromium Polypicconilate Calcium Gluconate, Vitamin C and Lycopene.

### INCLUSION LEVELS

250-500gm/MT of feed

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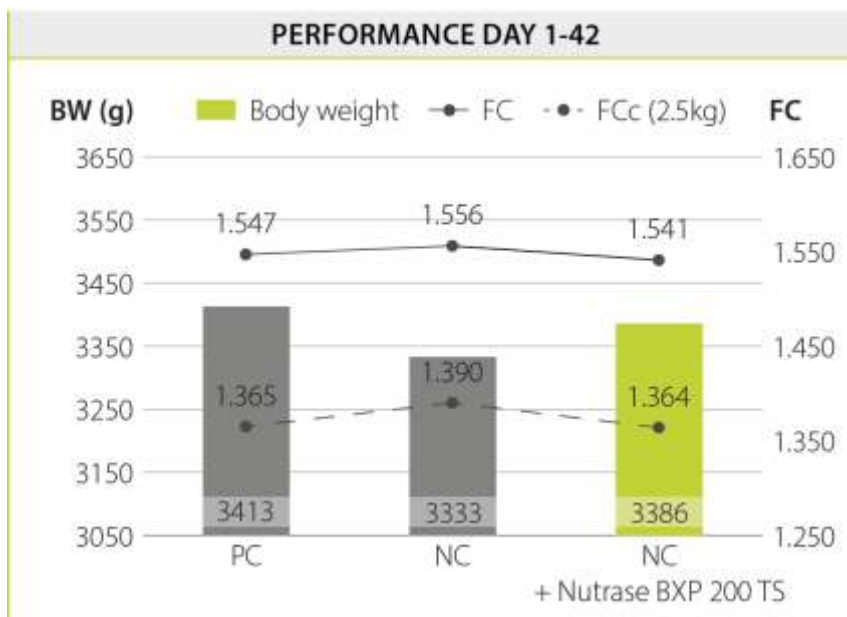
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e-mail : [info@biosintnutraceuticals.com](mailto:info@biosintnutraceuticals.com), [www.biosintnutraceuticals.com](http://www.biosintnutraceuticals.com)

(Table 1) with 6 replicates per treatment (11 birds/pen at the start of trial). The composition of the dietary diets is listed in Table 2. Body weight and feed intake were recorded at weekly intervals. Feed conversion was calculated from the measured weight gain and feed intake. Pen mortality was recorded to correct feed intake.

	STARTER D0-14		GROWER D15-28		FINISHER D29-42	
	PC	NC	PC	NC	PC	NC
	Ingredients (g/kg)					
Corn	541.3	566.6	568.5	595.2	583.8	622.9
Soybean meal	301.5	296.6	249.6	228.8	225.4	220.4
Full fat soybean	60.0	36.6	80.0	80.0	80.0	80.0
Meat-bone meal	25.0	25.0	25.0	25.0	25.0	25.0
Rape seed meal	-	25.0	-	24.5	-	-
Rice bran	20.0	20.0	25.0	20.0	25.0	20.0
Soybean oil	15.2	-	18.8	-	30.9	8.2
Dicalcium phosphate	18.4	8.8	16.7	7.3	13.7	4.3
	Nutrients (%)					
Crude protein	23.00	23.00	21.00	21.00	20.00	20.00
Calcium	0.90	0.78	0.84	0.72	0.76	0.64
Available P	0.48	0.34	0.45	0.31	0.40	0.26
Lysine	1.28	1.28	1.15	1.15	1.08	1.08
Methionine	0.47	0.62	0.56	0.56	0.54	0.54
AME (kcal/kg)	2900	2800	3000	2900	3100	3000



**Results**

At the end of the trial period (day 42), the birds fed the negative control diet presented the worst results for body weight and feed conversion. The nutrient and energy reductions of the negative control diet effectively reduce broiler growth performance. The supplementation of Nutrase BXP 200 TS resulted in a higher body weight (+ 53g) and improved feed conversion (by 2.6 points) compared with the negative control group. Moreover, the feed conversion of the Nutrase BXP 200 TS group equaled the FC in birds fed the positive control diet.

### Conclusions

The supplementation of Nutrase BXP 200 TS improved the performance of broilers fed diets with reduced nutrient and energy levels. Based on these trial results, Nutrase BXP 200 TS can be supplemented to a corn-based diet with matrix values of 100 kcal AME, 0.14% P and 0.12% Ca without any probable detrimental effect on broiler performance.



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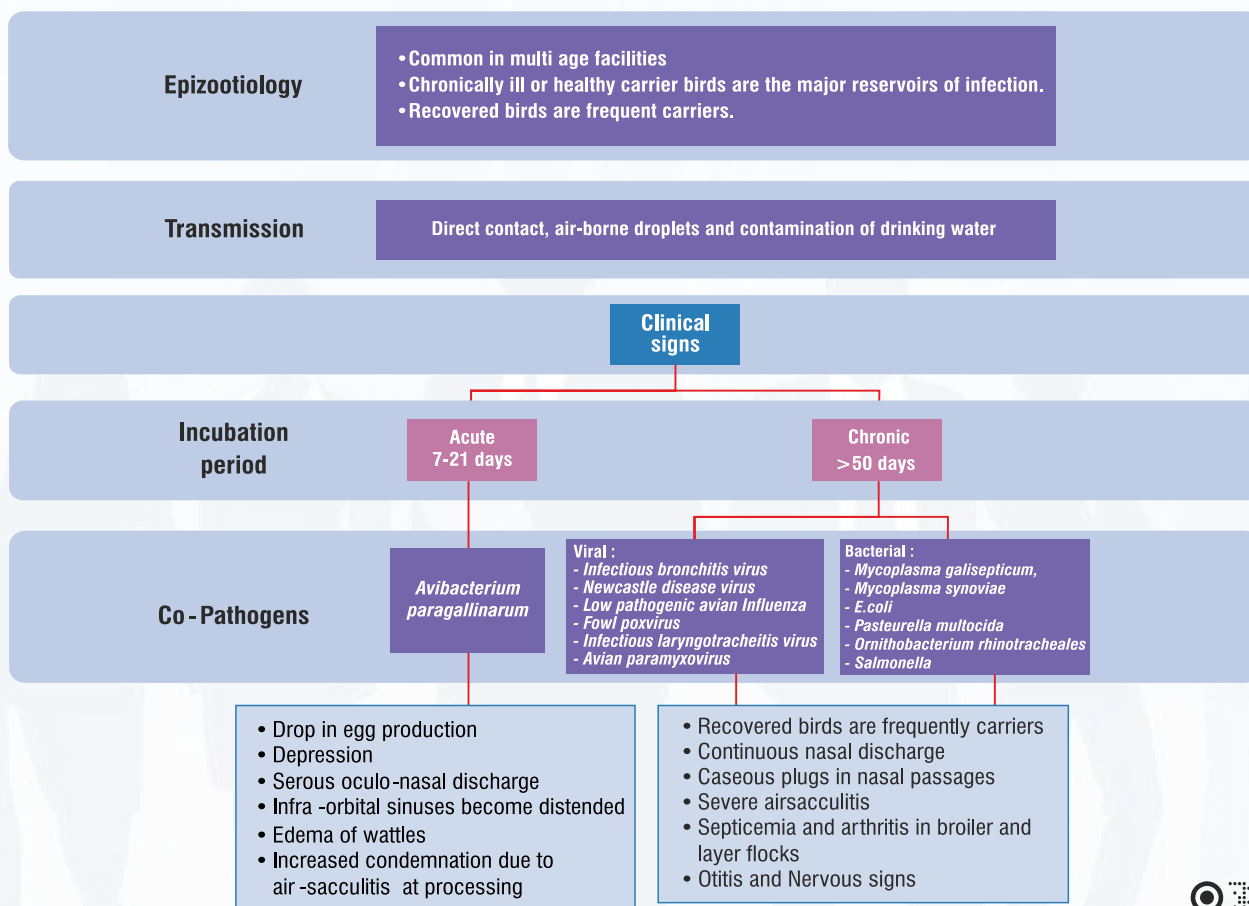


## “Infectious Coryza : An Old Disease, a New Insight”

### Introduction :

India, being a major admirer of poultry products suffers tremendously with this insidious infectious coryza every year, thus strives for some better measures.

Avian Infectious coryza, a highly opportunistic respiratory tract infection caused by *Avibacterium paragallinarum* is a re-emerging disease of poultry. Prophylactic measures with vaccination practice, the infection continues as complicated pattern of disease course worldwide that results in massive economic and production losses. The greatest economic losses associated with infectious coryza result from poor growth performance in growing birds and marked reduction (10%–40%) in egg production in layers. Infectious coryza can have a significant impact in meat chickens as there is increased condemnation, due to air-sacculitis at processing. When infectious coryza occurs in chicken flocks, the added presence of other pathogens and stress factors can result in disease outbreaks that are associated with greater economic losses than those reported in healthy flocks.



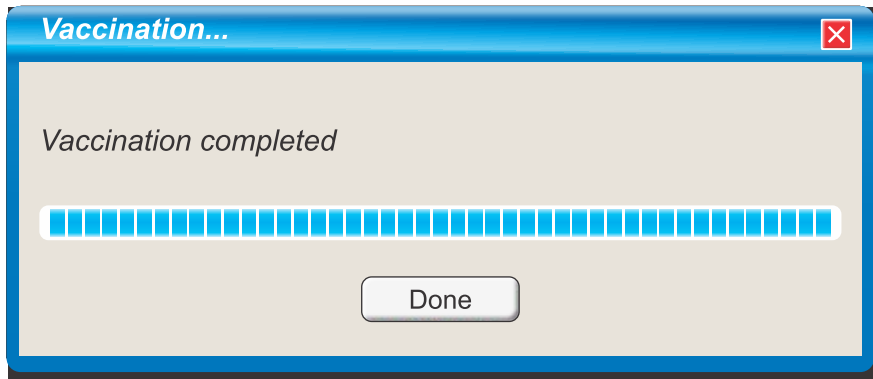


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Broiler	Commercial Layer	Breeder : Otitis and Nervous signs
		
		

### Serotyping schemes and the serotypes prevalent in India :

*Avibacterium paragallinarum* characterization dates back to Page classification, in 1962, that demonstrated three serovars A, B and C based on plate agglutination test. Subsequently, Kume characterization schemes were introduced for more confirmatory recognition of isolates that was based on haemagglutination-inhibition test (A- 1, A-2, A-3, A-4, B-1, C-1, C-2, C-3 and C-4).

The classification of the serovars are elaborated in the table given below :

Page scheme 1962	Kume scheme modified by Blackall 1980	Serovars identified In India
A	A1, A2, A3 & A4	A
B	B1	B
C	C1, C2, C3 & C4	C2 & C3

Note: 1. Isolates in India were earlier identified as A and C, but later prevalence of B were confirmed.

2. Large numbers of untypable isolates were identified as C-2 and C-3 serovars by Dr. Robert Bragg in India.



## **Control :**

### **1. Biosecurity :**

- Commercial farms that have multiple-age flocks tend to perpetuate the disease : All-in-All-out management is the best
- Depopulation; eliminates carrier birds : leave the premises vacant for a few days after thorough cleaning and disinfection.
- Pest control

### **2. Strategic use of antibiotics with proper therapeutic doses :**

- Sulphanamides in combinations with trimethoprim / tetracyclines / streptomycin
- Macrolides
- Quinolones

#### **Drawbacks:**

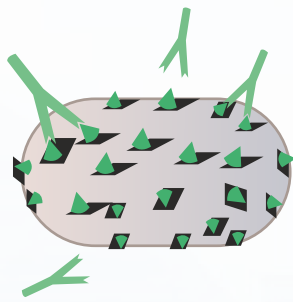
- Antibiotic resistance
- Carrier birds not eliminated
- Recurrence may occur

### **3. Vaccination :**

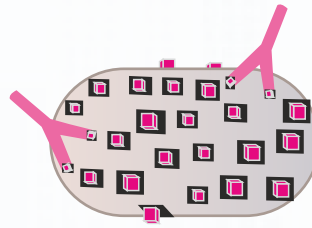
#### **A. General rule based on the Global Serovar distribution :**

- Most poultry regions of the world would be best served by an inactivated infectious coryza vaccine containing strains of serovars A-1, B-1, and C-2.
- In those regions where Kume serovar C-3 is present, the vaccine should contain C 3.
- Serovar C-3 is highly pathogenic
- There is very limited cross protection between the different strains in serogroup C.

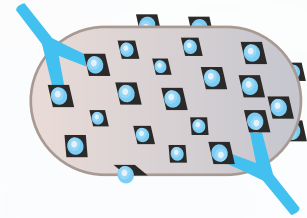
Cross - Protection Between Page Serovars : **No**



**A**

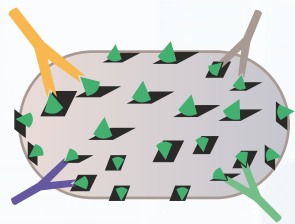


**B**



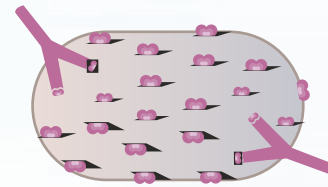
**C**

Cross - Protection Within Kume Serovars



**A1, A2, A3, A4**

**Yes**



**C1, C2, C3, C4**

**No**

**B. Vaccine efficacy depends on :**

- Understanding serovars prevalent and the Cross protection : Vaccine for India should include A, B, C2 & C3 serovars (**VH COR4, VH FIC7**)
- Effect of inactivating agent on the efficacy of bacterin
- Effect of antigen load on efficacy of vaccine ( $> 10^8$  CFU/dose of each strain)
- Effect of adjuvant without an vaccinal reaction (**VISA-15**)
- Vaccination timing
- Challenge load/management practice

### C. Recommended Vaccination Schedule :

Bird Type	Primary	Booster
Layer	8-11 <sup>th</sup> Week	13-15 <sup>th</sup> Week
Breeder	9-12 <sup>th</sup> Week	15-17 <sup>th</sup> Week
History of Early Challenges	3-4 <sup>th</sup> Week	7-8 <sup>th</sup> Week & 13-15 <sup>th</sup> Week

### 4. Proper Control of other endemic respiratory pathogens :

#### Viral :

- *Infectious bronchitis virus*
- *Newcastle disease virus*
- *Low pathogenic avian Influenza*
- *Fowl poxvirus*
- *Infectious laryngotracheitis virus*
- *Avian paramyxovirus*

#### Bacterial :

- *Mycoplasma galisepticum*,
- *Mycoplasma synoviae*
- *E.coli*
- *Pasteurella multocida*
- *Ornithobacterium rhinotracheales*
- *Salmonella*



# Kidney Problems in Poultry and Their Management

The performance of any being is governed by the synchronization of various systems. Excretory system is one of the most important systems of body, which help in excretion of water and metabolic wastes and to regulate acid-base balance in the bird's body. Animals accumulate ammonia, urea, uric acid, carbon dioxide, water and ions like Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup>, phosphate, sulphate, etc., either by metabolic activities or by other means like excess ingestion. These substances have to be removed totally or partially. The excretory system in the domestic fowl consists of the two kidneys, each with a ureter that carries the urine produced by the kidneys to the cloaca where it leaves the body. The most important and main organ of the excretory system is the kidney, which needs utmost care to keep it healthy and working. When the kidneys are diseased or damaged and unable to carry out their functions efficiently, the animal becomes debilitated and death often occurs quickly.

Like almost all birds, the domestic fowl does not have a bladder as is found in most mammals and amphibians. The urine leaves the ureters and enters the cloaca where it is moved by reverse peristalsis into the large intestine, which permits excess water to be re-absorbed before elimination. This re-absorbed water is available for use by the bird. In poultry, uric acid is the result of purine and protein metabolism. The liver produces uric acid, which is then expelled by the kidneys. Birds are uricotelic, meaning they lack the enzyme uricase, which, along with the fact that they conserve water, allows them to expel urine as semi-solid uric acid in their faeces. It is usually passed as a paste and is deposited as a whitish or cream cap on some faecal stools. When the kidneys are not functioning as efficiently as normal, or sometimes when a very high protein diet is provided, there will be large quantities of uric acid in the blood and

the system may be unable to cope. The kidney tubules are likely to swell with accumulated urate deposits and when this happens, the white lines are clearly visible on the surface of the kidneys. The accumulation may lead to damage of the kidney cells which leads to nephritis. The high concentration of uric acid in the blood may result in filtration through the capillary walls which leads to visceral gout, which is when a whitish deposit is found on the surface of many visceral organs.

## **Gout: Most common kidney dysfunction in birds**

Gout is caused by a disruption in the uric acid excretion metabolic pathway. As a result, it develops when uric acid synthesis exceeds the capacity of the kidneys to excrete it, or when renal function is damaged and the created uric acid is not excreted. The latter is the more common cause of gout attacks. The buildup of uric acid in the blood and bodily fluids is caused by reduced uric acid excretion. As a result, it is more likely to precipitate in various tissues.

Deposits are made up of white chalky needle-shaped shiny crystals known as 'tophi' in both forms and based on the areas of uric acid deposition it is categorized as follows:

- Gout caused by the deposition of uric acid crystals in the visceral organs, such as the kidney, liver, heart, and gut is Visceral gout. It is the more severe and common type of gout seen in chickens. It has a high mortality rate in young chicken, ranging from 15% to 35%.
- Articular gout is uric acid crystal deposition in the joints, ligaments, and tendon sheath. It is a type of gout that is persistent and has a genetic propensity. It is a rare occurrence in poultry.

In gout, uric acid levels in the blood can reach 44mg/100ml, compared to 5-



**Dr. Vandana Sharma**  
**Dr Asra Khurshid**





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7mg/100ml in a healthy bird. High levels of uric acid in the blood and/or uric acid deposits in tissues can cause mechanical damage and thereby disrupt their function, resulting in growth depression and death.

Various factors, but loopholes in poultry nutrition complicate genesis of gout and feeding practices becomes a prime factor:

- **Calcium: Phosphorus Ratio** - Calcium-sodium-urate crystals form when there is too much calcium in the diet and not enough phosphorus available. Low phosphorus aggravates the development of urate crystals because it serves as a urine acidifier.
- High vitamin D3 levels boost calcium absorption from the intestines, which can promote urate crystal production and deposition.
- Long-term vitamin A deficiency induces tubular epithelium sloughing and blockage, leading in urate buildup in the kidney.
- High dietary protein levels have little effect on healthy kidneys. However, feed containing more than 30% crude protein can be harmful in the case of pre-existing renal disease. This causes an increase in uric acid production, which affects renal function.
- Sodium overdose puts the kidneys under additional strain. Excessive sodium bicarbonate use raises urine alkalinity, which can lead to kidney stone formation. Hard water with a high salt concentration puts a strain on the kidneys as well.
- Sulphates - Gout is favored by decreased calcium resorption, which results in excessive calcium release through urine.
- Adding urea to protein supplements increases the nitrogenous

component, which boosts uric acid production even more. Gout can develop because of this, especially if kidney impairment is present.

- Mycotoxins such as Ochratoxin, Citrinin, and numerous pesticide/insecticide residues wreak havoc on kidney tissue, inflaming the tubules and ureters.
- Water deprivation, due to mechanical malfunction, may affect kidney function, but research has not demonstrated a direct result in gout.
- Antibiotics, such as sulfas and aminoglycosides, are eliminated from the body via the kidneys and are potentially nephrotoxic, particularly when water intake is restricted.

#### **Ways to contain kidney damage and rejuvenate kidney health**

Removal of the above mentioned causes and modification of diet help the birds to get rid of gout problems. Inclusion of phytochemicals may help the birds to reverse the damage caused by urate crystals or other causatives. Nutritionists suggest inclusion of acidifiers, electrolytes and vitamins in diet to prevent gout problems effectively.

**Acidifiers:** Acidifying the urine using acidifiers like ammonium chloride, potassium chloride and ammonium sulphate help to lower the urine pH that in turn favours uric acid excretion. It also helps to dissolve the kidney stones and preserves functional renal mass of affected birds.

**Electrolytes:** It is necessary to maintain an ideal electrolyte balance. The salt content of feed should be carefully monitored to ensure that it does not exceed 0.5 percent. Here, sodium from water sources must also be taken into account. In cases where gout is present, sodium from sodium bicarbonate sources should be minimized. In gout, providing more electrolytes through water aids in flushing out uric acid crystals and lowering of mortality as well.

**Vitamins:** Ensure adequate levels of A, D3, K and B complex vitamins. Vitamin A is an essential vitamin for chickens, and if they are receiving a vitamin A-deficient diet for any length of time, it can cause damage to the lining of the ureters leading to gout. Not all commercial chicken feeds contain vitamin A, and in

those that do, the amount degrades over time, especially when it is exposed to sunlight. < 20 KIU/kg of vitamin A added to the diet may be of benefit.

**Herbal extracts:** Very recently, the inclusion of herbs or herbal extracts in the diet of birds has been found effective in revitalizing the kidney functions. Silymarin, derived from the Silybum marianum plant, activates kidney cells and speeds up cell proliferation. It increases lactate dehydrogenase activity (LDH) in kidney cells that have been injured by nephrotoxic medicines and enhances protein and DNA production. Allixin helps people with chronic kidney disease by lowering blood pressure, reducing oxidative stress, and increasing renal function. By scavenging free radicals and hydroxyl radicals, allixin has antioxidant effects. Terminalia chebula phenolic extracts reduce LPO and restore Glutathione S-transferase and Glutathione reductase activity, making them renoprotective. Extracts of Boerhavia diffusa protect the kidneys from drug-induced nephrotoxicity. Tinosporacordifolia supplementation decreases the body's absorption of sugar-derived carbs and helps to prevent diseases like nephropathy.

Many combinations of acidifiers, electrolyte, vitamins and herbal extracts have been formulated to prevent kidney dysfunctions and gout conditions. Renosafe, Nephcare, Heplus solutions containing acidifiers, sodium citrate, vitamin A and herbs like Silybum marianum, Terminalia chebula, Allium sativum and Boerhavia diffusa et has been found to be impressive in results. They have been able to revitalise kidney functions and repair damaged kidney epithelium. They favour more excretion of uric acids by lowering urine pH. The antioxidant properties of herbs may protect the kidneys from oxidants and free radicals. While the nutritionists and poultry specialists found the combinations of herbal extracts with acidifiers, electrolytes and vitamins to be effective in preventing kidney dysfunctions, more research and trials need to be carried to promote the optimum kidney health.

*More details can be reached at [www.nutricare.in](http://www.nutricare.in)*

# Avian Influenza – A Major Economic Threat To Indian Poultry Industry

Avian Influenza a zoonotic disease which is also known as Avian Influenza, Bird flu, or fowl plague. Avian Influenza is highly infectious /contagious zoonotic viral disease mainly of wild birds and domestic birds. This disease spreads very fast and can cause huge economical losses in poultry. The losses may be due to culling of birds and hampering or stoppage of international trade of poultry and poultry products which will affect the total economics of the poultry industry. As it is a zoonotic disease so it can transmit to the human beings who are in close contact with birds.

India has emerged as a global hotspot for AI. It is also habitat for migratory waterfowl and habitat for several resident waterfowl species throughout the year. India lies at the heart of Central Asian Flyway (CAF), which spans 30 countries and covers 279 populations of 182 migratory water bird species. Last year in Jan 2021 Indian poultry industry

suffered a lot of outbreaks of AI. Outbreaks were confirmed in 9 states in poultry birds and 12 states for other migratory and wild birds. As per the reports the overall loss of the poultry industry at the national level is estimated at about Rs. 3400 Cr due to bird flu as per financial expert from the poultry industry (Ref. TOI Hyderabad 2021).

## Etiology

Infectious virus belongs to Orthomyxovirus family, single stranded RNA virus. There are three types A, B and C which are differentiated by internal viral proteins. Influenza A type is responsible for human influenza and avian disease. Influenza B type is human only and type C causes milder disease and swine also.

Influenza A is more important for poultry. It is subtyped on basis of viral envelope glycoprotein hemagglutinin (HA) and Neuraminidase (NA). There are 16 different HA antigens (H1 to H16) and





and animals, and the original strain changes to a new antigenic variant. This changes in the antigenic component of Influenza A virus are known as "antigenic drift".

9 different NA antigen (N1 to N9). Influenza A virus can infect variety of domestic and wild birds. Avian Influenza in domestic chicken and turkey is classified according to disease severity as HPAI (Highly Pathogenic Avian Influenza) and LPAI (Low Pathogenic Avian Influenza).

HPAI is highly virulent and it can cause near about 100% mortality in chicken. All subtypes found in poultry but subtype H5 and H7 are seen more as cause of outbreaks.

All the birds including domesticated birds are susceptible to avian influenza virus but migratory birds as water fowls and wild ducks are natural reservoirs of avian influenza virus. Chicken and turkey are also susceptible to virus and can cause fatal infection.

In recent studies shows that the low pathogenicity virus (LPAI) can mutate to highly pathogenic virus.

Haemagglutinin protein mediates attachment to and entry of the virus into host cell by binding to sialic acid receptors on cell surface. Influenza A virus is genetically labile and can escape from host defense system. This virus lacks mechanism of proofreading and repair the error which occur during replication. This change, uncorrected error remains and genetic changes happens during passage through human

When two viruses from same host system or originally coming from different host replicate in the same cell and reassort or swap genetic material. In this process changes in NA or/and HA protein takes place. Such abrupt changes in virus antigen is called as "antigenic shift ". The virus originates from this mechanism creates a novel virus subtype that differ from both original viruses which may have capacity to completely evade the immunity of host.

#### Transmission and spread

In winter more incidences of HPAI are seen, this may be due to agricultural practices, environmental changes, migratory birds flying from one place to another, water fowl and duck migration.

Low pathogenically avian influenza virus is distributed worldwide. Virus may be present in backyard poultry in villages without showing any symptoms but carrier as they directly come in contact with wild birds and ducks. As migratory birds mostly resides near water bodies, so many times the outbreaks of AI are seen more farms in the close proximity of water bodies, lakes, ponds, etc.

HPAI virus arise from mutation of LPAI virus, mainly H5 or H7, and which may cause high epidemics. The incubation period may vary from few days in birds to some days in flock. Virus transmission is

due to inhalation or ingestion of infected material.

Spread is due to lack or breaches in farm biosecurity norms, as movement of birds, close contact of flock with wild or migratory bird, contaminated droppings, fomites as equipment, trays, gunny bags and trucks carrying live birds, coops. Airborne transmission is possible between farms but in close distance and not far off distance.

AI virus sheds in feces and respiratory secretion of birds. The aquatic birds as water fowl and duck fecal material contain large amount of virus. Once AI virus enters poultry flock it can spread on the farm by both fecal-oral route and aerosols due to close proximity of birds. House flies can act as mechanical vector/carrier but not far distance.

#### Clinical signs

LPAI – Low pathogenic virus causes mild illness in poultry and shows symptoms like decrease egg production, misshaped eggs, decrease fertility or hatchability in breeder flocks, sneezing, coughing and ocular / nasal discharge in affected flocks, swollen infraorbital sinus, decreased feed and water consumption and gradually increase trend in mortality.

HPAI – Highly pathogenic virus shows severe illness in poultry and chicken. Marked depression, decreased feed and water intake and often neurological and respiratory signs are seen, sudden heavy mortality occurs in flock. Signs as coughing, sneezing, sinusitis, bloodtinged oral nasal discharge, ecchymoses on shank and feet, edema and cyanotic lesions on unfeather skin i.e., on wattles and comb, diarrhea, drop in egg production and misshaped eggs.

#### Post mortem lesion

LPAI – Rhinitis, sinusitis, congestion and inflammation of trachea and pneumonia in some birds, hemorrhagic ovaries, involuted or degenerated ova in reproductive system in layer birds, airsacculitis, peritonitis is also seen in birds.

HPAI – Classical symptoms of oedema and cyanotic lesions on head, comb and wattle. Gross lesions may not be classical lesions as bird die per acutely.



Hemorrhagic lesions on shank and legs

### Prevention, control and biosecurity

In some countries the live or killed vaccine is available and regularised. It is depend upon the Regulation from AH dept. Govt. of India, GOI has not permitted for Poultry AI vaccination in India.

So, control through biosecurity as there is no effective and economical treatment in poultry.

### Virus effective disinfection

AI virus is susceptible to various disinfectant and can be destroyed with Sodium hypochlorite solution, Ethanol 60- 95%, QAT, Aldehydes (Glutaraldehyde, Formaldehyde), phenols, povidone iodine.

### Virus can survive

1. In dry/wet faces for 8wk at 4C but 18hrs at 42C or for 24hrs at 37C, so temperature increases virus will get destroyed. At 37C or sub-zero temperature as in frozen lakes or water bodies for 30days, 6 days at room temp ie at 37 C. On plastic virus can stay for 24-48 hrs, on cloths and paper 8-12 hrs. But it can survive or stary alive for decades in frozen lakes, snow.

### For effective biosecurity

- Isolation
- Traffic control
- Decontamination/Sanitation

### Some of the basic biosecurity measures

- Keep the poultry houses from wild birds, pests and other livestock. Don't grow any fruit or flower plants near the poultry shed which may attract wild birds which can be carrier for AI.
- Keep visitors to a minimum. Allow

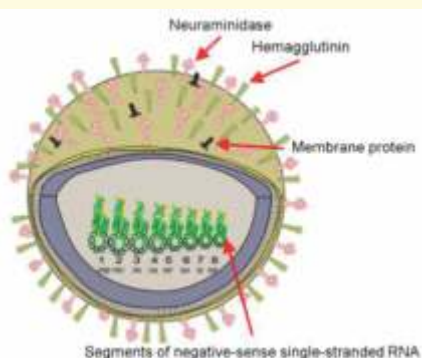


only those people who are important to visit your farm. Make sure that they use proper biosecurity measures before entering the flock.

- Use foot bath and dedicated shoes for visiting the flock. Use some good disinfectant in foot bath which can be TM effective in presence of organic matter. (Prophyl 75)
- Make sure you have effective pest control program mainly rodent and insect control.
- Do not visit any other farm and don't keep any birds or desi birds at farm premises. Keep close watch if any of the workers coming from outside are keeping any birds at their house, as far as please avoid.
- Don't bring any equipment or feed from other poultry farm. If equipment is brought outside, please ensure they are properly cleaned and disinfected with effective TM disinfectant. (Benzo DT)
- Ensure your flock is healthy and if any problem get the help from veterinarian.
- Once you dispose of any flock, please

ensure you remove all litter material properly and dispose of away from the poultry farms.

- Cleaning and disinfecting the farm with proper disinfectant is very important to keep the next flock and TM farm away from the disease. (Vulkan S)
- All the vehicles coming to farm must be cleaned and disinfected. Use wheel dip for the vehicles entering your TM farm premises. (Prophyl 75). But don't take outside vehicle near to shed or flock.
- In shed Cleaning & Disinfection (C&D) first dry cleaning, then wet cleaning with some detergent / foam (DT TM Foam ) and disinfecting with effective disinfectant or fumigation. If possible, take Sanitary break as surface or facility to dry before entering birds in the shed, so keep the shed vacant for 2/3 days, this is to stop multiplication of organism and break the cycle. (Benzo DT™)



To know more, please contact Huvepharma technical team



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# Significance of Regular and Ephemeral Photoperiod in Poultry Management

The sensitivity of poultry towards light has been well documented over time and changes displayed in birds during light alteration are well exhibited through various responses like change in bone growth, production and fattening rate. Besides, the bird's health, behavior and welfare are also hindered with irregular lighting program. In poultry, duration of photoperiod is known to govern the reproduction and egg production ability of birds. The alteration in light duration pattern by birds under natural environmental conditions is generally experienced during spring and autumn where there is an increase and decrease in normal light hours respectively. An increased natural day length hastens sexual maturity for pullets and boosts egg production rate. However, declining natural day light hinders sexual maturity and restricts rate of egg production in layers. Therefore suitable photoperiod duration is required to optimize the biorhythm in birds regulating feed and water intake, hormonal secretion and distribution of birds in the poultry house.

However, recent research developments have stated that it is not the duration of light that hampers production and reproduction ability in poultry; but the constant changing lighting pattern that affects the performance of poultry. Darkness is as important as light for health of birds. Whilst long day light stimulate feed intake promoting growth rate in birds, a longer than stipulated light duration is harmful at maturity. Skeletal disorder is one such problem that arises in birds kept under longer light duration. Skeletal deformities are

commonly observed as the activity of bird increases during light causing increased incidence of bone loss, fractures, osteoporosis etc. resulting in overall loss to poultry industry. Continuous and longer photoperiod increases locomotion activity in birds; melatonin which is responsible for bone development is secreted in dark; lack of melatonin and increase locomotor activity promotes skeletal deformities.

Continuous lighting in poultry house stimulates release of follicle stimulating hormones and LH increasing growth of follicles and enhancing sexual maturity. With continuous light birds produce larger eggs but fewer in number; health status of birds was also not good. Therefore, ephemeral photoperiod came into picture and with more research studies the importance of ephemeral photoperiod got noticed. Keeping the birds in 15 hour light and 8 hour dark period did not alter the egg production as when kept at 15 hour light and 5 hour dark period. Moreover, early maturity was achieved in birds when kept at 6 hour light and 21 hour dark period than 6 hour light and 18 hour dark period. No changes were observed in parameter of egg output when ephemeral lighting was followed as against continuous light.

Following the ephemeral photoperiod strategy as against continuous photoperiod will restore the health status of birds; reduce practice of cannibalism which increases with increased light, decline in skeletal deformities due to increased activity in light, better feed conversion



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Anant Simran Sidhu**

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Poultry	Duration
1-5 days chicken	24 hours
6-10 days chicken	23 hours
Pullets/Layers	15 hours
Broilers	2 hours light; 2 hours dark

efficiency and performance. Sexual maturity and egg production are not affected on adaptation of alternate light and dark hours in poultry house. Though increased photoperiod or

continuous lighting program is recommended in poultry houses, there are reports which suggest negative impacts on growth rate with 23 h photoperiod. Therefore adaptation to alternate light and dark hours will serve basis for successful poultry management.

#### Conclusion

Photoperiod is very important for poultry management as it has a direct

influence on metabolic activity, productive parameters and the bird's appearance. It becomes essential to design a lighting program that balances the activity of poultry achieving adequate health and production of birds. Knowledge on bird's behavior with changing light pattern as well as changing environmental condition is also important for successful poultry management.

## News Shalimar Group Adopts Right to Protein's 'Soy-Fed Brand'

February 14, 2022, witnessed the adoption of Soy Fed, India's first-ever feed label, introduced by Right To Protein by the Shalimar Group. Shalimar Group, a leading member of the poultry industry, has come forward to adopt Soy Fed for enlarging the scope of a national initiative by Right To Protein.

The soy-fed label will appear on the company's entire range of tandoori nuggets and will gradually be incorporated into all of the company's poultry products.

The chairman of Shalimar Corp Ltd, Masood Ahmad, said, "As a pioneer enterprise engaging in a wide-ranging business of poultry feed milling and animal nutrition, providing our customers with the highest quality food choices has always been our top priority.



We truly believe that the 'Soy Fed' label is going to be a key industry differentiator in aiding awareness about the nutritional benefits of Soy as an animal feed and how that positively impacts the consumer's health."

Furthermore, Jaison John, lead from India, US Soybean Export Council, stated

that protein is essential for human consumption, livestock, and aquaculture. It plays a vital role in the growth and development aspect. With Shalimar Group and Sneha Group coming together, awareness for soy as a sustainable source of nutrition can see progressive growth.

# Proven Effectivity: Intra Hydrocare eliminates Avian Influenza in drinking water

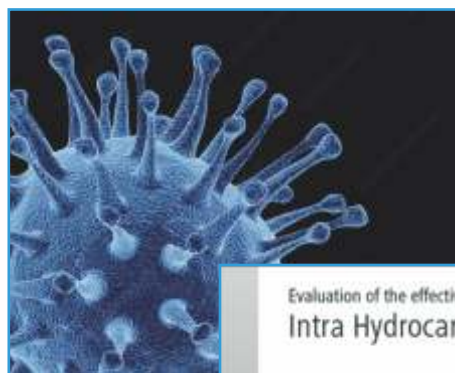


Over the last few months the devastating effects of bird flu, caused by the Avian Influenza (AI) virus, were once again felt across the entire poultry farming sector. Once the infection is confirmed to be present in a farm, it is necessary to cull the infected and exposed animals to effectively control the virus spread. Thereafter, it is of utmost importance to ensure the effective cleaning and disinfection of the premises to eliminate the virus from the farm.

Contaminated water has been implicated in the introduction of highly

pathogenic animal diseases such as AI. Recent research published January 2021 on the transmission of the AI virus by the University of Wageningen (The Netherlands) has demonstrated that the Avian Influenza virus is easily transmissible via water. This is in line with findings of Leung, et al (2007)B that samples of drinking water collected from poultry units provide higher rates of the influenza virus than fecal droppings. Poultry drinking water may sometimes be overlooked, but can play a large role in the spread of the disease.

“ The threat of the devastating Avian Influenza virus remains high. Outbreaks of the bird flu in poultry farms have been increasing worldwide. Recent testing by an accredited laboratory has demonstrated that Intra Hydrocare is also effective in elimination of the Influenza virus in drinking water. ”



TEST REPORT

Evaluation of the effectiveness of  
**Intra Hydrocare**

Test virus: influenza A virus H3N8 (avian)

Method: based on EN 14675:2015 (10 °C) (low-level soiling)

Quantitative suspension test for the evaluation of virucidal activity of chemical disinfectants and antiseptics used in the veterinary area – Test method and requirements (phase 2, step 1)

Sponsor:  
Intracare BV  
Voltaweg 4  
NL - 5466 Veghel





Intra Hydrocare is a biocidal product, mainly used for cleaning and disinfection of water distribution systems in farms. A current study at an external accredited laboratory has demonstrated that Intra Hydrocare is highly effective in the elimination of the AI virus. Results showed a 3% product dilution was already effective with a contact time of only 30 minutes in this laboratory test under worst-case conditions.

In farms however, applying a longer contact time is sometimes more practical (e.g. during cleaning of the

water lines overnight between the cycles). Since biocidal efficacy is dependent on product concentration and contact time, a lower product dilution can be used if the contact time is prolonged. Contact Intracare for tailored advice.

In conclusion, the use of Intra Hydrocare can ensure that water, as an essential nutrient, can be maintained free from any microbiological contamination and can prevent the spread of infectious diseases such as Avian Influenza.

*Literature sources:*

A. Wageningen University, 2021. WBVR research provides insight into the course of bird flu infections. January 8, 2021.

B. Y.H.C. Leung, et al, 2007. Poultry drinking water used for avian influenza surveillance. *Emerg Infect Dis.* 2007 Sept;13(9):1380-2.

*The study was based on EN 14675, a European test standard for viruses that is accepted worldwide, and included worst-case test conditions (e.g. a 10 °C test temperature and the addition of soiling that interferes with the product).*

*Full report available upon request*

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[www.intracare.nl](http://www.intracare.nl) | [info@intracare.nl](mailto:info@intracare.nl)



# Government Committed for the growth of Poultry & Livestock Sector through Special Funds and Financial Assistance



**Ricky Thaper**

*Treasurer,*

*Poultry Federation of India*

Livestock sector is a critical sub-sector of agriculture in the Indian economy. According to the Economic Survey (2021-22) tabled in the parliament recently, the livestock sector consisting of dairy, eggs and meat, grew at a Compound Annual Growth Rate of (CAGR) of 8.15 per cent. As per the estimates of National Accounts Statistics, 2020, the contribution of the livestock sector in the total Gross Value Added (at constant prices) of agriculture and allied sectors grew from 24.32 per cent in 2014-15 to 29.35 per cent (2019-20). The livestock sector contributed 4.35 per cent of total GVA in 2019-20.

According to FAOSTAT data of 2020, India ranks third in egg production and sixth in meat production in the world. India's egg production has increased from 78.48 billion in 2014-15 to 122.11 billion in 2020-21. The per capita availability of eggs is at 91 eggs per annum in 2020-21 (Provisional). Meat production in the country has increased from 6.69 million MT in 2014-15 to 8.80 million MT in 2020-21. According to Basic Animal Husbandry Statistics, 2020 states that India's poultry meat production was 4.34 million MT, contributing almost 50% of the total meat production in 2019-20.

### **Allocation for Livestock sector in union budget (2022-23):**

Keeping in mind the importance of livestock, Union Finance Minister Smt. Nirmala Sitaraman in the Union Budget (2022-23) has allocated Rs 6,407 crore for the Ministry of Fisheries, Animal Husbandry, and Dairying, which is an increase of 44 per cent from the 2021-22 allocation.

Commenting on the union budget (2022-23), Union Minister of Fisheries,

Animal Husbandry, and Dairying, Shri Parshottam Rupala said that 95% of livestock farmers are concentrated in rural India, infrastructure development under the "Vibrant Villages Program" will play a significant role in enhancing market access for these poultry and livestock farmers. He stated that the reduction in alternate minimum tax for cooperatives from 18.5% to 15% as announced in the union budget (2022-23) is indeed a significant announcement that would provide a level playing field between cooperative societies and companies. The incentivizing digital banking, digital payments & fintech innovations as announced in the union budget will have a ripple effect in the poultry and livestock sector.

According to Shri Atul Chaturvedi, Secretary, Department of Animal Husbandry & Dairy (DAHD), said, "in the budget (2022-23), allocation for livestock has been increased by 40%, and central sector schemes have been increased by 48%, indicating the government's commitment to the growth of poultry and dairy farmers.

### **Schemes which Poultry sector could take advantage:**

To support the poultry and livestock sector, DAHD was implementing the Entrepreneurship Development and Employment Generation (EDEG), as a component of the National Livestock Mission (NLM). Poultry Venture Capital Fund was implemented as an activity under the EDEG. The salient features of realigned NLM scheme include employment generation, entrepreneurship development, increase in per animal productivity and thus targeting increased production of meat, eggs, milk and wool. The scheme also envisages increase in

“

The government gives thrust on infrastructure development for poultry and livestock sector in the union budget (2022-23) and specialised schemes and funds to boost the poultry industry which plays a critical role in the Indian economy.

”





# SAI KRISHNA POULTRY EQUIPMENTS



Deluxe Drinker  
( Standard & Large )



Chick Feeder



Chick Drinker



Deluxe  
Jumbo Drinker



Feeder



Jumbo Drinker



Gas Brooder



Parent Feeder  
Male & Female



Egg Tray



Chick Feed Tray



Nipple Drinking System

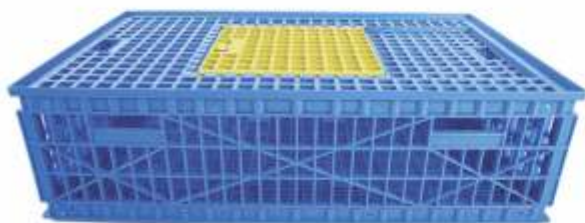
## SAI KRISHNA PLASTIC INDUSTRIES

### Manufacturers of Innovative Poultry Equipments

Factory : Behind Petrol Bunk, Padmanagar, Karimnagar - 505002, Tel : 0878 - 6504508, Mobile : 94404 06200

Sales Depot : Plot No : 16, Road No:2, Opp : Nimanthran Function Hall, Mamatanagar Colony, Nagole, HYDERABAD - 68, Telangana

Tel : 040 - 64610508, Mobile : 92466 59508, E-mail : [info@saikrishnapoultry.com](mailto:info@saikrishnapoultry.com), Web : [www.saikrishnapoultry.com](http://www.saikrishnapoultry.com)



Bird Transportation Crate



Chick Transportation Crate

## Balaji Polymers

Factory : Akkaram Village, Gajwel Mdl, Medak Dist. Regd. Office : Karimnagar : 98490 59508, Hyderabad: 96523 98686  
email : [balajipolymers.hyd@gmail.com](mailto:balajipolymers.hyd@gmail.com)



productivity development through breed improvement. The scheme also focuses on increasing availability of fodder and feed.

After union cabinet approval in June 2020, Animal Husbandry Infrastructure Development Fund (AHIDF) worth Rs 15,000 crore was established and implemented from 2020-21. AHIDF aims at incentivizing investments by individual entrepreneurs, private companies, Farmers Producers Organizations (FPOs) and companies for establishing meat processing and product diversification, infrastructure and Animal Feed Plant, Breed multiplication farms and Breed improvement technology and the dairy processing and product diversification infrastructure.

Under AHIDF Rs. 13,500 crore would be the loan to be disbursed by the scheduled bank and Rs.1500 crore will be the end borrowers contribution. Out of these Rs.1623 crore will be provided as interest subvention of 3 per cent over a period of 10 years for repayment of loan during 2020-21 to 2030-31. Rs 750 crore will be credit guarantee to be managed by NABARD for which Rs.75 crore will be provided by the DAHD to NABARD for 10 years.

So far 206 projects with an estimated cost of Rs.2813 crore have been approved under AHIDF with a loan of Rs.2014 crore. Projects worth Rs.911 crore for setting up animal feed plants, Rs.227 crore for meat processing and Rs 874 crore for setting up of dairy

processing plants have been approved. Establishment of animal feed plants also include activities such as bypass protein unit, total mixed ration block making unit, mineral mixture plant, animal feed testing laboratory and integrated poultry meat processing units.

The leading poultry industry players have welcomed the "pro-farmer friendly" announcements by Union Finance minister Smt. Nirmala Setharaman and several schemes being implemented for the livestock sector as this will boost our agricultural economy and will accelerate benefits with other sectors connected to agriculture, poultry, farming, animal husbandry, food processing etc. Capital and technological infusion into these sectors will definitely help build a long-term vision to yield greater results in the coming years."

DAHD is implementing a scheme - Assistance to States for control of Animal Diseases (ASCAD) under the Livestock Health and Disease Control (LH&DC) scheme which covers the vaccination of economically important poultry diseases, including control and containment of emergent and exotic diseases. Under the LH&DC Scheme financial assistance is provided to the States for up gradation of Diagnostic Laboratories at the district level. In addition, there are six Regional Disease Diagnostic Laboratories for prompt and effective diagnosis of different Livestock and poultry Diseases.

According DAHD data, Rs.13.87 crore had been released to states and UTs under ASCAD for the FY 2020-21 and 2021-22 for control and containment of Avian Influenza including compensation to farmers whose birds have been culled, poultry eggs and Poultry feed has been destroyed

The Central Poultry Development Organizations are carrying out Training programs to increase skill of entrepreneurs in the field of Poultry and Livestock. The Department is also assisting the State Government to impart training on Poultry, Sheep, Goat, Pig farming to enhance technical knowledge and entrepreneurship development.

Under this component, the establishment of a composite Poultry unit having parent farm, mother unit and Hatchery unit can be established. Further, to increase the Poultry production under NLM financial assistance is provided to States and Union Territories Governments for implementation of Rural Backyard Poultry Development and Innovative Poultry Productivity Project. These programs envisage the components which take care of the shelter, feed, medicine, equipments, litter etc. to improve the living conditions of the Poultry and Livestock.

Overall the government has ensured that the livestock sector gets necessary financial help for ensuring sustainable growth of the sector.



Mitigating heat and oxidative stress  
in your birds with

# HERBAL-C

## Heat stable natural vitamin C

Triple advantage

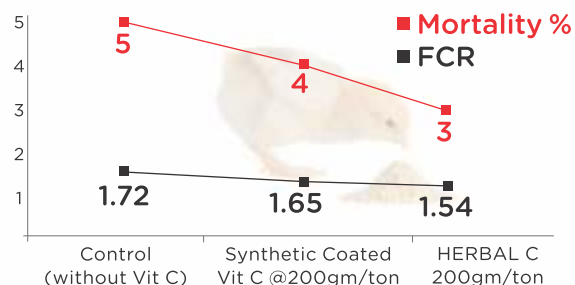
Adaptogen

Antistress

Universal  
antioxidant

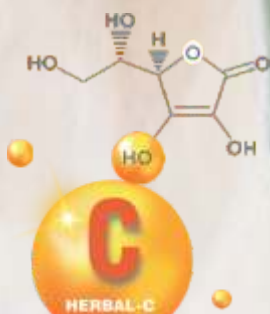
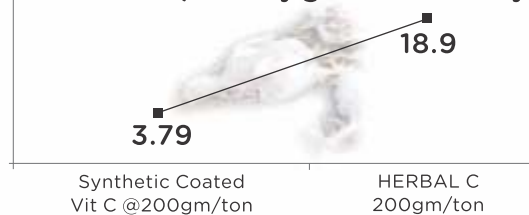
- Highly heat stable at pelletization
- Sustained and self replicating activity
- Outstanding bioavailability

### HERBAL C improves performance in birds exposed to heat stress



### 6 times higher antioxidant potential of HERBAL C

% Inhibition of lipid peroxidation  
(Activity guided bioassay)



**FEED INCLUSION RATE:** 100g of HERBAL C can be used in place of 100g synthetic Vitamin C with higher stability and better activity. 100-200g per ton of feed is recommended as depending upon severity of stress.

**WATER INCLUSION RATE:** 10ml per 100 birds or as advised by the poultry consultant. To be given orally, mixed with drinking water, once daily. Double quantity is recommended for breeders.



# The Budget 2022 - Simplified

Siddhi Gupta Co-Editor

The 2022 Union budget was much awaited, and it was expected to draw its roots deeper into flourishing the primary sector of the economy. Earlier in 2021, the economy faced a downhill due to pandemics, and many entrepreneurs and startups came forward to deliver their finesse in Agritech.

- 44% more for Department of Animal Husbandry & Dairying
- 20 billion allocated for Livestock Health and Disease Control
- Farm Credit Target increased to 18 lakh crore



## Brief Scenario of Budget 2022 in Poultry Industry

The Union Budget gave dim attention to the poultry industry and highlighted that the poultry industry contributes up to 4.1% to the GDP. The allocation under Livestock Health and Disease Control programme was increased in Union Budget 2022 to 20 billion for 2022-23. This can help the government focus on livestock betterment, increasing productivity in the poultry sector.

The Union Budget, presented by Finance Minister Nirmala Sitharaman, also prioritized the poultry and livestock sector by allocating an increase of 44%, estimated to Rs. 6407.31 Crore for Ministry of Fisheries, Animal Husbandry and Dairy.

The budget focused on helping farmers

and poultry owners by giving extensions in the farm credit for the year 2022-2023. The farm credit target has also increased from Rs. 16.5 Lakh crore to Rs. 18 lakh crore.

## What benefits can the industry gain through Budget 2022?

- The poultry owners and industry can gain more credit from the banks, which can be disbursed to livestock and poultry farmers.
- Better loan provision facilities from government, private and co-operative banks for industries engaged in Agri-tech and poultry farming sector.
- Better and decreased interest rates for the primary sector
- Disbursement of finance for technology-oriented poultry farming





### How can Budget 2022 shape industrial profit?

- The poultry industry can dive deeper into intensive and free-range poultry farming through automated access control systems and environmentally controlled & prefabricated houses.
- The scope for layer farming can also be increased by installing egg processing units and investing in egg graders.
- The free flow of finance in the Poultry industry can also enable poultry health monitoring devices to keep track of poultry health and prevent the spread of diseases.
- The usage of the battery cage method can be adopted, which will decrease the labour cost and prevent the risk of infection.
- The boosting of warehousing facilities as presented in the budget can increase the cold storage of poultry meat.
- Then, the frozen food poultry industry can gain a high-profit margin due to increased cold storage facilities at subsidized rates.
- The exports of poultry meat and eggs can also be increased due to storage facilities.

### How can Poultry companies increase production?

Industry owners can avail feed supplements to producers like probiotics, vitamins, minerals, amino acids, mould inhibitors, enzymes,

preservatives, coccidiostats, and antioxidants to increase the nutritional value and production. The company can invest in buying Biotechnological and immunological tools combined with breeding methods to develop robust stocks with a higher production level.

### Private sector and government collaboration

The government has focused its shift on engaging with the private parties for technological advances, which will boost productivity and efficiency. This will lead to revolutionizing and increasing the supply of poultry products and will also enhance profits for producers. This will push the production and harness overall growth and development in the poultry sector.

The private sector can take significant advantage of the schemes brought forward by the government. This will not only provide a higher profit to poultry owners but will also will lead to better government infrastructure for production, storage, and distribution which can sustainably endeavour business.

### National action plan

The Department of Animal Husbandry, Dairying & Fisheries has also provided a National action plan for 2022 to benefit the poultry industry.

The national action plan focuses on increasing the production of the Poultry industry to meet the domestic demand and increase the export of the poultry sector globally. The exports in the

poultry sector can lead to a higher gain in foreign exchange, thereby strengthening India's Economy.

The domestic demand for broiler productions and supply has also increased. The budget has given a chance for broiler productions to be commercially profitable in rural and urban lands. Due to the higher allocation of the amount, steps can be taken to industrialize the production units.

### Where can the budget money be allocated?

The necessity for the poultry industry lies in infrastructural needs. Some modern upgrades can also be provided, such as Chain-feeders, automated public access control systems, Air Quality Monitor, Remote Access Livestock Monitoring that can ensure nutritional and disease-free poultry production.

The budget allocation money can be used in many ways beneficial to every state, which can not only help our economy at large but will also help develop the country within.





# FIPOLA: FOR UNLIMITED CHOICES

The poultry and seafood industry is expanding at an incredible speed. New and new ideas are being developed for accelerating production, consumption, and supply. Fipola, a Chennai-based start-up in south India, has joined the race for delivering hygienic and healthy poultry experiences to its customers.

The Omni channel retail D2C brand was Co-founded in December 2016 by Sushil Kanugolu, Aishwarya Rai, K Ramana, and KV Ramana. Previously, Sushil, CEO and managing director of Fipola, also worked as a director for 7 years in SR Marine Food private limited in Chennai, one of the leading suppliers of processed seafood in India. His experience led to a start-up that focused solely on the meat and seafood retail business.

**fipola**<sup>®</sup>  
FRESH & HONEST MEAT

**The main aim of Fipola includes redefining meat retailing by delivering premium quality and hygienic products for a convenient shopping experience and creating a safe space for purchasing quality meat and fish.**

# fipola®

FRESH & HONEST MEAT

Fipola has raised over \$9.83million, of which \$6.73 million was raised in a Series A funding round. The total valuation amounts to about \$43.5million. The investor in Series A funding includes A. R. Foundation and Beanstalk, and others. Many angel investors have also seen the scope and vision of Fipola and have invested thereby.

Fipola has taken over the south poultry industry by storm and spread over 60 retail stores across Chennai, Coimbatore, Hyderabad, Puducherry, Tirupur & Vellore aim to cross over 100 stores by the end of March 2022. Earlier, it started with only 10 stores in Chennai, and Fipola has over 26 retail outlets in Bengaluru and plans on expanding the base further throughout the country.

Fipola offers a variety of services with unlimited choices of chicken, lamb, goats, fish, dry fish, eggs, exotic seafood, cold cuts, and ready to cook range for meat lovers and delicacy lovers. Fipola has also started with a new service, 'Fipola on wheels,' with the concept of bringing the store to consumers' doorstep.

The immense growth for quality products witnessed a retention rate of 94% on repeat consumers and an expanding database of more than 6.5 lakh consumers. The company plans on expanding its employees and surpassing its staff strength by 22% of the current staff.

Fipola has developed a business model wherein they directly procure poultry from farmers. The meat, eggs, and seafood procured go through grade and quality testing, cleaning, and processing to maintain their freshness. They mail avail of HALAL, ISO, HACCP, and FSSAI certified products.

The main reason Fipola has become popular is the quality products offered by the brand. The affordable pricing and hygienic delivery have been the biggest USP of the company. Fipola has more than 1 lakh downloads across the play store and a rating of 4.3 stars. The application provides delivery of poultry products within 2 hours.

The Omni channel meat brand proving hybrid system experience is sure to catch the attention of many and expand its endeavours further throughout India.



# First Online Round Table of Startups in Poultry Sector Organised by CPDO&TI, on 10<sup>th</sup> February, 2022

“ Central Poultry Development Organization & Training Institute under Government of India, Ministry of Fisheries, Animal Husbandry & Dairying, a premier Institute located at Hessarghatta, Bengaluru organized a First Online Round Table of startups in poultry sector on 10th February, 2022

”

Poultry sector in India is a techno-commercial sector with contribution of nearly 1.5 lakh crores to the GNP with about 6 million people being employed directly or indirectly. Poultry Farming Practices in India are one of the best in the world. The Science adopted in Genetics, Nutrition, Management and Disease prevention are one among the best in class matching Global Standards. Presently it is estimated that 5 billion broiler population, 250 - 300 million layers and about 4.5 to 5.0 crore broiler breeders are being reared in India. This has established Indian Poultry Sector as one of the best farming activity at a global scale with highly efficient production systems in place. However, poultry products namely egg and meat are being traded as commodities in the traditional market system. The new age companies are entering into poultry sector by adopting technology expertise of brand building and consumer focus approach in re-defining marketing of poultry products.

This event is organized to showcase such startup leaders including Unicorn (valuation of 1 billion USD) and Soonicorns in the sector. The founders invited for the online round table are,

**Mr. Abhay Hanjura – Licious (Unicorn of 2021), Mr. Shan Kadavil – Fresh to Home, Mr. Narendra Pasuparth - Nandus, Mr. Vignesh Soundararajan/Mr. Krishna Prasad – Delfresh (Suguna Foods), Mr. Nishanth Chandran - Tendercuts, Dr. Sanjoy Kumar Das & Mr. Sushil Kanujolu - Fipola, Mr. Abhishek Negi - Eggoz, Mr. Mahesha – My Chicken & More, Mr. Harsha – The Meat Factory.**

The Online Roundtable started sharp at 10.30 am on 10th February, 2022 by opening remarks from Dr. Mahesh P.S., Joint Commissioner & Director, CPDO&TI. In his opening remarks, he acknowledged the achievements of startup ecosystem in India touching 88 Unicorns as on date with addition of 44 in the year 2021 and 8 unicorns in just six weeks of 2022. This startup revolution is recognized at the highest level including Hon'ble President speech at joint session of Parliament, recent speeches of Hon'ble Prime Minister and Finance Minister emphasizing the role of startups to grow and achieve the status of Unicorns, Decacorns and to transform into multinational companies from India.

Further he elaborated that digitalization, consumerism, focus on safe food and health would create more demand for protein foods like eggs and chicken in India with a priority preference for safe and certified traceable products. Hence he advised to adopt latest technologies like Block Chain, Artificial Intelligence and Data Mining to capture a pie in the digital India.

The startup leaders were posed three questions in the interactive session of the roundtable namely 1. Their startup story, 2. Uniqueness of their business model with message for the budding entrepreneurs, 3. Expectation from the poultry sector or producers of poultry products.





**Dr. Mahesh P.S.**

Dr. Mahesh presented Mr. Abhay Hanjura the leader of the group in establishing first Unicorn in D2C(Direct to Consumer) brand in India during the year 2021 and congratulated his co-founder Mr. Vivek also for achieving such a great milestone in Food Sector.



**Mr. Abhay Hanjura**

Mr. Abhay Hanjura humbly replied that the status of unicorn is more of a noise than any great achievement from their prospective. He said that this is a collective effort of all present in this round table in achieving recognition from the consumer. He mentioned that a single player cannot change the ecosystem for transforming animal protein consumption in India. He and Vivek started with the excitement to develop a startup similar to "Amul" in Dairy. He mentioned that opportunities are immense in the order of magnitude and depth and said "We can get tired but opportunities never get tired".

To the question of uniqueness of their business model, Abhay made a statement "Idea ka value nahin hotahai" unless consumer has to believe the execution of the claim. Execution is the key variable reflecting the success of organization which in turn drives repeat customers. Licious started in 2015 in just under 15 cities covered to have 2 million customers with a revenue of 1000 crore per year of which 7 cities are just added in the last year. The key message he said is

brand development in this category is not a "Spray and Pray" business but needs depth, quality and execution. His message for the budding entrepreneur is "Someone need to find fun in enjoying boring execution on a consistent rate".

His expectation from the poultry sector is to recognize that "We are not competing each other but trying to organize 95% of the unorganized sector in a better way to derive value for both producers and consumers. The questions posed by the investors for both Abhay and Vivek were "What are you trying to do in this category, this will never work", "India will not accept this as a separate category" they proved their assumptions wrong and said, "Our time has come and our time is now". Abhay assured that "Consumerisation by collective efforts of all stakeholders can create more startups and the pie will expand very fast in India.



**Mr. Shan Kadavil**

The second founder is Mr. Shan Kadavil – Fresh to Home. In his reply acknowledged efforts of Licious and other players in creating ideal ecosystem for startups in India under this category. He also faced the same question by investors that "Do you have enough depth to create a separate vertical of B2C brand in conjuncture with the likes of grocery brands like BigBasket etc. all over the world there is no separate fish and meat category brand recognized till date. However Shan believed in Indian food habits which are very different than the rest. It is indicated by their success to create as a separate Brand so that people have recognized the likes of Licious, Fresh to home, Tendercuts, Fipola as separate brands for Meat category.

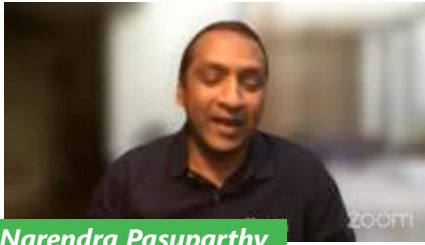
He thanked poultry sector having enabled the ecosystem with their

hardwork with 50 years of expertise in developing efficient production system of global standards in India. Mr. Shan is a serial entrepreneur from 2015, created two companies and exited with so so success. However, he became the CEO of Zinga India, a multibillion dollar gaming company. Here, he had contacted Mr. Mathew who developed "Sea to Home.com" a traditional fish exporter from Cochin. Shan developed interest and has to search Mathew to get great quality fish in India. Shan convinced Mathew to meet his gap of scalability from financial standpoint and technology stand point to start a new startup "Fresh to Home" in 2016.

Fresh to Home today are operating both in India and UAE going close to 1000 crore revenue per year handling 30,000 tons of meat every year with 2 million customers and about 1.5 million orders per month. In his message to the upcoming startups that the need of looking business with "New set of eyes, expertise, technology, differentiated product, find the unmet need". He said that "Me too products" are hard to survive unless they have a value for consumer.

Shan told that this category is fast growing in tier I cities with around 20 billion dollar market and overall 50 billion market in India. Dr. Mahesh asked the question of when will you stop burning or losing money, he replied that it's a social service by the beginners in the category like Abhay of Licious and Shan to create a consumer brand which requires huge capital investment by way of marketing and brand building. Further he said that their startup is Ebita profitable in Delhi and Bangalore and yet to reach the revenue threshold in the newer cities which will definitely stand in some time to come.

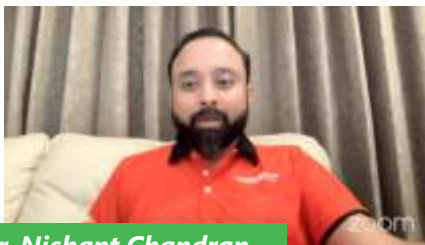
Next in the lineup in the round table was Mr. Narendra Pasupathy, producer cum startup from Nandus who said that "We being producers end up in a local broken supply chain



**Mr. Narendra Pasuparth**

not getting my price for my product. He got inspired by Madam Anuradha Desai's words to start retailing and to build a brand is essential for getting the price for the product. After returning from US, Naren started this new venture to create a consumer brand which is "Hyper local and Omnichannel". Presently Nandus is operating 55 outlets in Hyderabad and Bangalore. He acknowledged the vision of Sri. Kishore Hegde, who has put meat retailing on the map of India with a new outlook of shops way back in 15 to 18 years ago.

In his message to the upcoming startups "Go out and build a brand – Don't be afraid". When he came back, he took up a second hand processing plant, setup biogas, solar and automation units in poultry production, many felt that he is stuck. He was disgusted for not getting the rate for his product inspite of hard work as an efficient producer. Then he decided to go out to develop a consumer brand by adopting professionalism by inducting experts, technology etc. His message is simple and clear "Let go the Control, delegate and facilitate to develop a scalable organization".



**Mr. Nishant Chandran**

Mr. Nishant Chandran, an Engineer graduated out of Bangalore being native of Chennai appreciated the efforts of CPDO&TI in creating such a platform for all the startup

founders to meet online on a single platform. He said that this is the best time to transform as India's macro parameters are highly positive with a growth of 8 – 10 % GDP per year which enables lot of dispensable income in the hands of the consumer. Further he said that consumer spends dispensable income first on food followed by clothes, lifestyle, investment, real estate, cars etc in the order of priority. Among the food, the choice is always meat being the country of 70 to 80% non-vegetarians. He voted for chicken as a priority meat from which more than 100 different dishes are being made and consumers never get bored eating chicken.

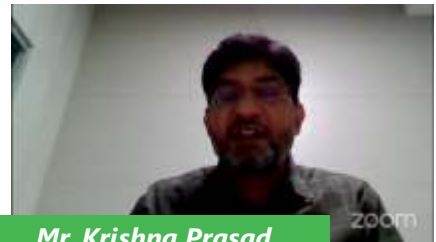
Nishant Chandran as a technocrat started a digital payment company and sold to Paris based entrepreneur during which time he used to travel every week to Paris up and down there he got exposed to meat market shops presenting clean and choice of meat. Back in India he mentioned that consumer has only two choices "Small piece or Large piece" and recognized lack of awareness, assortment, grading etc in this category.

Once an entrepreneur is always an entrepreneur" – This proved right for Nishant to start Tendercuts to solve the greater problem of frontend to create a consumer brand in this category. Presently Tendercuts is an online driven retail model with market leadership in Chennai and Hyderabad and just entered Bangalore. His philosophy is to transform the purchase experience at shops and to convert butchers into meat experts.

In his reply why they started stores first, he said that the opportunity he got in the beginning accidentally was a retail store with 1200 sqft format in which they created 1/3 as front area and 2/3 as storage/processing area. They adopted a distribution model wherein each outlet is like a factory outlet and meat is cut on the order by the consumer over the central model

wherein it requires huge capex investment for distribution.

Mr. Vignesh Soundararajan, Son of Mr. Soundararajan, Chairman and Managing Director, Suguna Foods has established a parent endorsed brand "Delfresh" in this category during last quarter of 2021. Representing delfresh, Sri. Krishna



**Mr. Krishna Prasad**

Prasad, Vice President Suguna Foods mentioned that Suguna being expert producer and processor wanted to expand as a consumer facing brand in the new ecosystem. Eventhough Suguna is having a revenue of more than 10,000 crores per year. And in his words "Just counting money and losing heavily" Past two years have been a great challenge for poultry producers with escalating costs of inputs of Corn and Soya. They have undertaken a new journey of branding 280+ stores of Suguna with Delfresh with new signage and brand identity and focusing "only offline model as of now".

To the question of supply constraints he replied that way back in 2002, Suguna started its first processing plant with 3500 birds per hour capacity with a total capacity of 6000 birds per hour then in India. However, presently the overall capacity in India is 1.4 lakh birds per hour with maximum utilization of only 70%, rest being idle because of processing alone being not lucrative.

Delfresh has chalked out greater expansion capacity with acquiring two plants in Chandigarh near Ambala and one in Belgaum. They have acquired land in Mandya near Bangalore for a Greenfield processing plant which will be ready in 15 to 16 months. They have identified five places in North, East,



Andhra Pradesh, Tamilnadu to make them up and running in next 24 to 36 months. He concluded saying that "Price has to be supportive for sustainability".

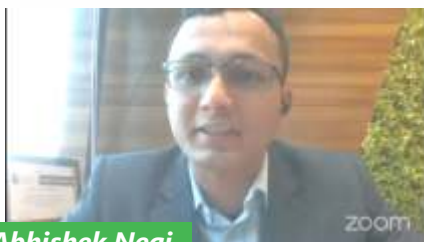
Mr. Susheel Konagolu and MBA from UK, retail exporter and a third generation sea food exporter had setup brand FIPOLA (Fish – Poultry – Lamb) in 2016 to create a consumer brand in India. Representing Fipola, Dr. Sanjoy Das, Chief Operating



**Dr. Sanjoy Das**

Officer narrated their journey to start with 3 shops in Chennai with two concepts, 1. Exclusive Stores and 2. Neighbourhood stores. 9 shops in 2018, 17 in 2020, 61 stores in 2021 and targeted 100 shops by March, 2022. Fipola has a staff strength of 1,200 with 140 crore investment.

Fipola has chosen colour yellow signifying chicken meat and their shops having an architecture of 3 chambers, front being a display area, second for processing, third for consumer interface. Their shops are generally 1500 to 2000 sq.ft. with an investment of 15 to 30 lakhs.



**Mr. Abhishek Negi**

Mr. Abhishek Negi, IITian from Kharagpur started his venture in 2017 finding an opportunity of protein deficiency in India and majority of the Indian population being deficient of Vit.D and B12. They wanted to solve the problem of non-availability of quality eggs, packed eggs, graded eggs etc. All four of them IITians without

knowledge in poultry set out "Do it ourself" started a 12,000 layer unit in Nalanda, Bihar to learn the entire process. They established a brand Eggoz jus to crete a brand similar to Milk of Amul, Bread of Britannia, Annapurna of ITC, Meat as in Licious and Fresh to Home.

They created an Asset lite model by adoption of artificial intelligence, Machine Learning, IoT platform for the farmers tiedup with Eggoz. They give all the backend and frontend support and buyback the eggs at a premium price. Eggoz presently doing in 11 cities and claiming to be No. 1 in North India and entered Bangalore recently. Abhishek acknowledged the contribution of government namely NABARD in funding their startup (NABARD has funded Tendercuts also).



**Mr. Mahesha**

Mr. Mahesha, founder of My Chicken and More established his venture in 2007 by his earlier experiences of working in leading feed sales division and working in leading chicken processing plant. This rich experience and enthusiasm and a commitment to provide healthy, hygienic quality meat with great shopping experience has created 16 outlets in Bangalore with largest outlet being 2400 sq.ft. Mr. Mahesha is passionate to work hard with a social responsibility of providing protein food to the Nation. He has set out a target of setting up of 200 outlets by 2025.

Mr. Harsha the founder of The Meat Factory established this brand along with his two friends experts in software sector. Mr. Harsha having worked in Godrej Tyson Foods for 6 years has developed the knowledge of providing safe hygienic meat for the consumer. They have setup 6 shops in Bangalore with a mission of



**Mr. Harsha**

providing quality product, hygiene environment and best price with large store space of 2600 sq.ft with a ambience for consumer experience with ice cream lounge, children play area in their shops.

**Dr. Mahesh P.S.**, Joint Commissioner & Director, CPDO&TI mentioned that Team CPDO&TI would conduct many such programmes in the coming months. The programme was conducted live on zoom, youtube channel of CPDO&TI along with recordings posted on facebook: cpdoti.bangalore, on youtube: CPDO&TI TRAINING. All are requested to download "Latest App of CPDO&TI" from Google Playstore by typing "CPDO&TI" for Android Version.

**Sri. S.M. Anwar Basha**, Senior faculty of CPDO&TI executed the job of Admin of conducting Online Round Table very effectively. CPDO&TI acknowledges contribution of Mr. Santhosh Nandavanam in designing the invite, facilitating Zoom and other support. The other team members of CPDO&TI worked hard in making this programme successful. Team CPDO&TI thank all the viewers participated through Zoom and Youtube. It is also acknowledged that Print Media extends great support by wide coverage of all online events of CPDO&TI across the country.

## CLFMA Webinar in association with AICOSCA was scheduled on the topic "Decorticated Cottonseed Meal (A Rich Source of Protein) for Milch Cattle, Poultry and Aqua" on February 18, 2022, from 14:00 pm to 16:00 pm.



The webinar was moderated by Dr. Devender Hooda. On behalf of CLFMA and AICOSCA, Dr. Hooda welcomed all the speakers and the participants to the webinar.

He said that, India is producing about 25% of the world's cotton seed and it is a key ingredient for animal protein. The purpose of this webinar was to discuss in detail the importance of cottonseed meal, which is a rich source of protein for milch cattle, poultry and aqua.



CLFMA Chairman Mr. Neeraj Kumar Srivastava delivered the Opening Remarks. He thanked all the participants, industry

colleagues, CLFMA Members and eminent speakers for joining the webinar, which was jointly organized by CLFMA and AICOSCA. AICOSCA is the premier body of the Cotton Seed processing industry in the Country. CLFMA's endeavour has always been to support the members and industry associates by bringing efficiency and improving performance at farm level thus contributing to sustainable livestock farming.

Mr. Srivastava highlighted that, our industry is facing severe protein challenges both in terms of quality and availability at right prices. Soya prices are on the higher trend and hence creating a huge impact on the cost of production of animal feeds thus incurring huge losses to the customers. He said that it is important to look into the possibilities of the using Cotton Seed Meal as feed for

milch cattle, poultry and aqua. He thanked all the eminent speakers and the participants for joining the seminar.



AICOSCA Chairman Shri. Sandeep Bajoria delivered the Opening Remarks and thanked all

the participants for joining the Webinar. He also thanked the Speakers, all CLFMA eminent office bearers, CLFMA Members and participants. He explained in detail cotton seed meal, its yield, its importance in feed as alternate source of protein. He also talked about its production status of this year and scope of increasing availability of cotton seed meal. He insisted to use cotton seed meal as alternate raw material for reducing feeding cost and increasing efficiency. He said that, AICOSCA would answer all the queries related to usage of cotton seed meal as animal feed.



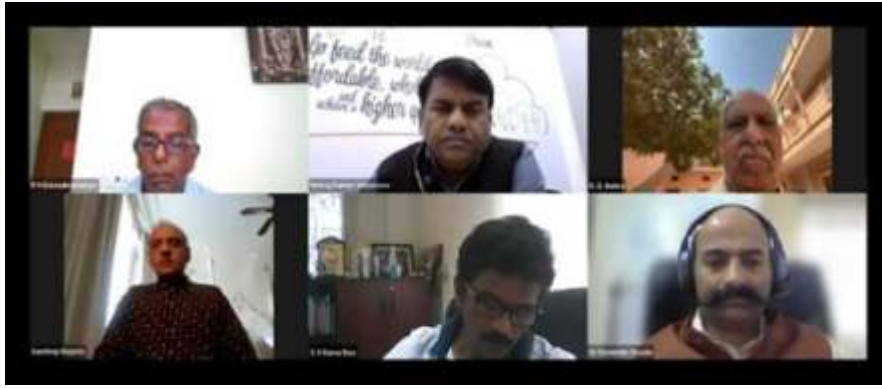
The First Speaker of the Webinar was Shri. R. D. Bohra, Hon. Treasurer, AICOSCA, who has been associated with the cotton

seed industry for the last 50 years. He gave very good insights about "Use of Cotton Seed Meal as a Protein Rich and Economical Feed Ingredient for Milch Cattle, Aqua and Poultry". He said cotton seed industry has survived due to its large usage as fish feed.



Second Speaker of the Webinar was Dr. S. V. Rama Rao, Principal Scientist (Nutrition), Directorate of Poultry Research,





ICAR Directorate of Poultry Research, Hyderabad. He is a knowledgeable scientist in Poultry Science. Dr. S. V. Rama Rao delivered presentation on "Cottonseed Meal in Poultry Diet" – A Potential Alternate to Soybean Meal", which was appreciated by all. He discussed about - What is protein? what is the ideal protein source that is available? what is the practical feasibility and limitations of using cotton seed meal in poultry? and how best we can make use of Cotton Seed Meal as a protein source in Poultry Diet. Some of the nutritional limitations of Cotton Seed Meal was also covered in his presentation. Overall it was a very informative session which was appreciated by all.



Third Speaker of the Webinar was Dr. R. H. Balasubramanya, Retd. Principal Scientist, Central Institute for

Research on Cotton Technology (CIRCOT-ICAR). He presented on the topic, "Value Addition to Cottonseed By-Products" with emphasis on "Cottonseed Meal". He explained in detail tray culture, fermentation, separate room for storage, sterilization process, feed mixture method to be adopted by small players, etc.



Fourth and the last speaker of the Webinar was Dr. D. Srinivas Kumar, Professor and Head, Department of Animal Nutrition, College of Veterinary

Science, Sri Venkateswara Veterinary University, Garividi, Vizianagaram (Dist) and he delivered a presentation on "The Potential of Cottonseed Meal as Cattle Feed Ingredient" in detail. He presented that, Cotton is the fourth largest oil crop in the world after soybean, rapeseed and oil palm and India is the largest cotton producer in the world followed by China and USA. He presented the state-wise area production, productivity of cotton seed, major trading centre of cotton seed in India and explained in detail cotton seed meal, production status in India, advantages of cotton seed meal, its nutritive value in detail, nutrient composition and its by products from the cotton seed crushing, proximate principle and gossypol of Cotton Seed Meal(CSM) in comparison with Soybean Meal(SBM) , mineral profile of CSM in comparison with SBM, Amino Acid Profile of CSM in comparison with SBM, Proximate principles and gossypol of

cotton seed meal in comparison with cotton seed cake and he insisted that, CSM is a cheaper source of protein. He also discussed the comparisons of Cotton seed meal v/s other cotton seed by products, etc.

After completion of the presentation by Dr. D. Srinivas Kumar, Forum was opened for the Q & A Session, questions asked by the participants were satisfactorily answered by the Speakers very well.

The Webinar ended with the summarization and vote of thanks by Mr. Peravali Kotirao, Hon. Secretary, AICOSCA.

The Webinar was in association with AICOSCA was appreciated by the



participants. Almost 242 registered for the said Webinar and 131 participants attended the Webinar.





# Hendrix Genetics and Chi Farms Expand Partnership For Increasing Layers Production

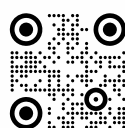
Hendrix Genetics, an animal breeding, genetics, and technology company, has joined hands with Chi Farms Ltd., an agribusiness company and a Tropical General Investment Group member for increasing the production of old layer chicks in Nigeria.

Through this partnership, Chi Farms Ltd's main advantage is technological advancement, technical support, capacity building, and training.

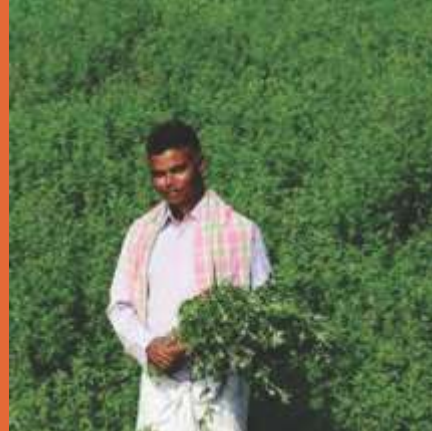
In the limelight of this partnership, Dr.TunjiOlaitan, the managing director of Chi Farms, said, "Our strategic expansion program will respond to demand forecasts in the short, mid, and long term by providing both breeder chicks and commercial layer chicks in response to market demands. We are also committed to developing our pen houses and hatchery capacities. Upgrades on the existing infrastructure in line with continuous technical improvements are being carried out for world-class poultry management".

In collaboration, The Africa Area manager of Hendrix Genetics also said, "We are excited to expand the scope of our partnership with Chi Farms to continue to improve breed quality, increase production volume to meet market demands, and provide technical training through our breeding programs."

The executive director of Chi farms also stated that a special poultry training centre for local farmers is also under construction for providing technical training to customers and partners.



## Making smiles brighter and farming better



Himalaya wellness has been the epitome of contributing to society. The whole aspect of CSR enriches the community and bridges societal and economic gaps. The main objective being, dedicating towards contributing to society at large.

The corporate advocacy into making society a better place and spreading smiles has been the spotlight of their CSR activity. In association with NGO Smile Train India, Himalaya started a mission of spreading smiles under their social impact initiative called Muskaan.

Muskaan has been reaching out to children to raise awareness at the initial level of cleft lip and palate treatment and providing them with corrective 45 minutes surgery. This noble cause has improved the quality of life amongst young lives, thereby bringing a Muskaan (smile) to every child affected by cleft.

Due to a lack of awareness about cleft and treatment options available, continuous efforts have been made to fund free life-saving cleft surgeries for children in need. The success of this initiative has transformed the lives of

millions of children through Muskaan over 5 years.

The other activity undertaken under the CSR initiative concentrates on empowering marginalized farmers' lives by helping them become financially more secure through the cultivation of herbs by using good agricultural practices.

This initiative has inspired millions of farmers to get a higher income and have better savings. The farmers produce ayurvedic herbs, and the Himalaya group purchases from them at a mutually decided price, thereby giving the farmers a fair share of profit. Through direct purchase, farmers are spared from storage and transportation costs.

This sustainable management provides an abundant opportunity for marginalized farmers to cope with the consequences of the pandemic posed in the farmers' community. Being an MNC has globally worked towards achieving health initiatives and helping the community in health, education, agriculture, and hygiene.





# IoT for Hatchery Management

The digital revolution is making inroads in the countryside and animal agriculture is going hi-tech. MLIT Solutions with 'PoultryMon' is leading the race. They deliver end-to-end IoT Solutions for manufacturing, agriculture, and poultry farming, to help them unlock new levels of productivity and potential. This real-time remote monitoring solution for poultry already has clients in industry behemoths like Suguna Foods.

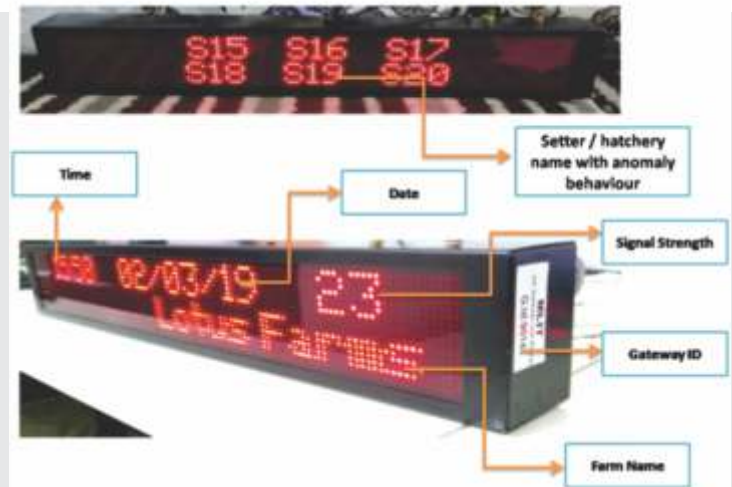
MLIT-Sol Pvt Ltd was established by Srinivas Chindam in 2016. He has over 25+ yrs of experience in Software, Business Intelligence and Analytics.

Srinivas comes as a Solution Architect with vast knowledge having worked in more than 10 countries for companies like GE, SONY, Texas Instruments, ANZ Bank, Wipro, Sodexo, Netapp, Xerox etc. and helms the Overall strategy, Technology IoT and AI (Artificial Intelligence) technology enhancements and new product line developments for PoultryMon at MLIT.

PoultryMon - smart automation at the hatchery level by MLIT could be a game changer in increasing productivity and quality. We learn in-depth about PoultryMon in an interview with the Founder CEO of MLIT solutions Mr. Srinivas Chindam.

## Srinivas Chindam

CEO of PoultryMon, MLIT-Sol Pvt. Ltd.





**From manufacturing to poultry is a very diverse switch. How did you come to this field and where did the idea originate?**

We started our foray into IoT in manufacturing Industry as we have a family business of manufacturing Aerospace fasteners. Entry into Poultry sector was rather coincidental. Later while working with a client who also happened to have a hatchery had to suffer a complete hatch loss due to operator negligence during night time we realized the importance of monitoring live stock in real time for deviations and maintain conditions throughout the hatch cycle.

The idea to have a smart management system in place where the manager can have seamless visibility of the process in real time within his mobile and also have alert mechanisms to track inconsistencies in the system to contain hatch loss was born.

**How did you go about planning and developing it?**

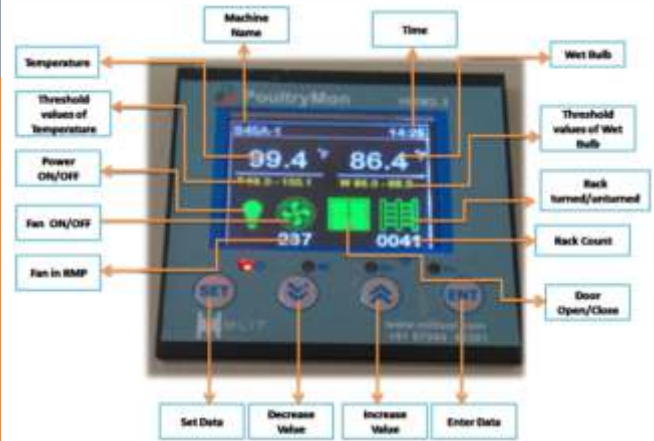
Extensive research on field by our team to understand the functionality across from farm to hatchery and the breeding cycle enabled us to identify the pain areas of labor intensive and technology primitive poultry industry. To bring in connectivity and develop advanced technology which is agnostic to existing machinery in the farm was challenging. We succeeded in demonstrating the value of adding sensors to make a hatchery smarter for sensing and monitoring by applying niche technologies like Internet of Things. We are the first company from India to implement IoT technology at farm level.

**Idea turning into reality, how long did it take?**

It took us little more than a year to bring it to the market after number of trials and testing. The product patent is still pending.

**What were your challenges in this journey?**

As IoT is still in its nascent stage and evolving at a rapid pace, it was challenging for us to find expert resources in development of our hardware and also local production partner. After little iteration of design and the functionality we have standardized our offering now. The potential of disrupting Poultry sector and introducing innovation which can benefit the end farmer and can usher in improvements both in productivity and quality is what kept us going even though we are boot strapped.



**What exactly is the PoultryMon and what are its features?**

PoultryMon is a real time remote monitoring solution for Poultry hatcheries and farms for efficient management and control of the critical conditions throughout the hatch cycle improving yield and quality. Making hatcheries and farms smarter through real time anomaly detection and predictive maintenance for increased efficiency and optimizing productivity.

**What is the technology involved in developing this system?**

We have used advanced and patented technologies of wireless connectivity of Internet of things (IoT), Analytics, Artificial Intelligence (AI), Big Data etc. platform for huge volumes of data for easy and real time traceability of Hatchery, Farms, Cold Rooms data.

**In what ways does this system benefit the breeder or the farmer?**

By continuously monitoring the temp and humidity in real time the hatchability and quality of chicks can be improved. Continuous monitoring leads to early detection of defects and remedial measures can decrease the hatch duration, the cost of operations. Timely actions result in better profitability. Data is automatically logged so the operator can be engaged with other hatching works PoultryMon helps in reducing production costs and increasing revenue.

**With a largely semiskilled workforce is it userfriendly?**

Our mobile and web apps are very user friendly. Plug and play model allows users to Install easily.

**Can the benefits be extended from the hatchery to the farm level?**

Yes, the chicks produced by maintaining optimal parameters throughout the cycle of incubation are of much higher quality and less prone to abnormalities.

**Poultry is synonymous with small towns and rural areas. How does PoultryMon impact them?**

Poultrymon has the potential to bring in paradigm shift in this Industry by drastically improving productivity and sustainability; it can be used to optimize the quality of

meat while reducing the possibilities of fraud through enhancing traceability. The objective is to deliver technologies that fit the entire value chain from farm to fork reinforcing and empowering farmers with yield improvement thereby increasing revenues and strengthening them for the challenges ahead by having better visibility and control.

**How compatible is PoultryMon with the wide range of Incubators available in the market?**

Our system is compatible with all the existing and new traditional Incubators irrespective of the maker.

**Promoting a new technology is a challenge. How did you go about it?**

Creating awareness about the technology, accepting and implementing into livestock environment as it is extremely sensitive to make the production more progressive is possible through educating the customers about benefits of how it can effectively increase the efficiency and quality of bird or egg.

We are promoting it through various channels like interacting directly with our customers and farmers on field, participating in workshops, exhibiting at International Poultry Expo. We are incubated in T-hub through T Hub and we are also taking help from Govt of Telangana for promotions in various Agri programs.

**What kind of market potential do you see for your product?**

We are providing solutions to more than 50+ hatcheries. We are trying to expand our product to serve more business verticals and planning to launch better version of this in 2023.

**PoultryMon is a technology based product with immense scope in the futuristic world of poultry. What are your plans to make it go global?**

We are preparing to expand our services internationally from 2023. We are planning to serve overseas mainly in under developing countries and wanted to help them grow in sectors like poultry.





# Proteon Pharmaceuticals Appoints **Dr Sachin Ingewar** as **Regional Sales Director**, India Subcontinent and South East Asia region



Mumbai, February 28, 2022: In line with its expansion plans, Proteon Pharmaceuticals India, a subsidiary of Proteon Pharmaceuticals S.A. Poland, today announced the appointment of Dr Sachin Ingewar as Regional Sales Director for Indian subcontinent and South-East Asia Region. Dr Sachin will drive Proteon's growth strategies across the regions to support the poultry industry in achieving safe and sustainable production.

Proteon Pharmaceuticals focuses on precision biology for microbiome protection to improve animal and human health, increasing environmental sustainability and eliminating the unnecessary use of antibiotics.

As a poultry nutritionist with over 20 years of comprehensive experience in sales and marketing, Dr Sachin has been highly successful in spearheading business in the industry through sustained revenue growth, specifically in the South East Asian markets.

Having a strong technical knowledge and expertise in strategic planning and execution, together with account management focused on precise pre and post-sales efforts, Dr Sachin has been known for improving organisational performance and unlocking new business opportunities through strategic alliances with key decision makers. He is a visionary who drives revenues and rapid growth profitability with focus on building a strong corporate culture. Dr Sachin has completed his Masters in Animal Nutrition with Poultry Major.

Elaborating on his new role at Proteon Pharmaceuticals, Dr Sachin Ingewar said, "This leadership role at Proteon is to develop our business in bacteriophages in the ISC and SEA and strengthen the presence of Proteon in the region. Our aim is to help poultry, aqua and the ruminant industry to achieve safe and sustainable production. We aim to build awareness about a need to reduce the usage of antibiotics in animal production. All in all, we are here to stay: #CareForAll- environment, humans and animal wellbeing."

Commenting on Dr Sachin's joining, Dr Paolo Doncecchi, Global Sales Director, Proteon Pharmaceuticals, said, "I am excited about this critical addition to our ISC Proteon organization. Dr Sachin will bring market knowledge, business acumen and empathic approach to people. Together, we will bring Proteon to new heights by serving customer needs."

## “ About Proteon Pharmaceuticals

Proteon Pharmaceuticals S.A. is a global leader in bacteriophage (phage) technology for livestock farming and aquaculture. Proteon's mission is to eliminate the need for unnecessary antibiotic use, reducing the risk of antimicrobial resistance (AMR), as well as to increase the sustainability of protein production through reduction of waste and improvement of on-farm efficiency. Proteon's products function by modulating the microbiome enabling prophylactic health. Proteon has patented a precision phage product development platform using genomics technologies, molecular biology, bioinformatics and artificial intelligence (AI) to create effective, reliable and safe antibacterial solutions for animal and human health. ”

### Contact Persons:

Proteon Pharmaceuticals:

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Proteon Pharmaceuticals India - Spokesperson

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# Aviagen Anadolu APPOINTS **BURAK KALELI** as General Manager



*Burak will lead and continue to develop our Turkish operation in order to increase security of supply*

EDINBURGH, Scotland. – Aviagen® Anadolu is pleased to announce the appointment of Burak Kaleli as its new General Manager. In this new position, Burak will continue to lead the Turkish business forward by continuing to provide customers with the best-quality breeding stock, supported by a local, knowledgeable team that is committed to supporting Aviagen's customers throughout Turkey, the Middle East & Africa (TMEA).

Burak holds a Bachelor of Science in Food Engineering from the Middle East Technical University in Turkey, and a Master of Business Administration degree from the University of Central Missouri, USA. Working for Aviagen for more than 20 years, Burak started as Commercial Manager with Ross Breeders Anadolu in Turkey before moving to New Zealand, managing the sales, production planning and export for Aviagen Australia and New Zealand. After returning from New Zealand, Burak became the International Planning and Quality Manager before moving to his previous role as TMEA Planning and Commercial Support Manager, where he led the planning, business information and commercial support activities for the TMEA Business Management Group.



# Licious Announces Two New Appointments In The Leadership Team



# Licious

Licious is all set to explore new market opportunities. An official statement issued on 10th February 2022 stated the appointment of two joiners, Vidyanand Krishnan and Meeta Aggarwal, who has been joined in as chief customer officer and the latter has joined as a chief financial officer, the statement read.

Vidyanand Krishnan had previously worked as a business lead with Walmart, Cognizant, and Accenture. After dedicating six years to Walmart, Krishnan further moved to Bengaluru in 2020 to join the emerging start-up, Dunzo, where he handled customer functions during the company's transition into a Q-commerce retailer.

Krishnan would be leading a strategic role in customer retention and loyalty as the new chief customer officer in Licious.

Meeta Aggarwal has 18 years of experience in financial planning, controllership, business partnering, performance management, and corporate governance. She has worked previously with popular organizations like Anheuser Busch-InBev India, Telenor, and HCL.

The Co-founder of Licious, AbhayHanjura and Vivek Gupta, jointly stated, "The unprecedented growth that

we have witnessed over the last two years is only an indication of how the future looks like at Licious. As we continue to propel ahead, we will rely on our able leadership team to aid progressive decision making, unlock newer frontiers for growth and work with all Licians to spread the love for meat."

**Welcoming Dr Palash Santra – DGM, Technical Services (PS & Hatchery) to RR Animal Health Care Ltd**

We are glad to welcome Dr Palash Santra to RR Animal Health Care Limited as DGM-Technical Services (PS & Hatchery). Dr Palash will be responsible for technical services specific to parent stocks & hatchery to the sales team.

Dr Palash is a Bachelor in Veterinary Science & Animal Husbandry (BVSc & AH) from Faculty of Veterinary & Animal Sciences under West Bengal University of Animal & Fishery Sciences (WBUAFS)

Dr Palash has an illustrious career of over 20 years that started with Amrit Hatcheries Pvt. Ltd in 2001 in Kolkata, West Bengal and the journey continued with companies like Venco Research & Breeding Farm Pvt Ltd, Globion India Pvt. Ltd, Shalimar Hatcheries Ltd & prior to joining us with Suguna Foods Pvt. Ltd as AGM – Breeder for Punjab region.

Dr Palash is based in Kolkata, West Bengal, India and can be reached at his phone number +91 81169 85100 and mail id dr.palash@rrahc.in

Please join us in welcoming and congratulating Dr Palash Santra!!

**About RR Animal Health Care Ltd.**

RR Animal Health Care Ltd is a company with diversified interested in Animal and Human Health & Nutrition segment. With over 14 years of legacy, this company has established itself with unique solutions for Human, Poultry, Aqua and Livestock management in India. With 3 manufacturing facilities in India, the company is committed to deliver value to its customers across diversified species & segments. Pioneer in farm biosecurity segment with new concepts, the company is well recognized as a 'Unique Solution Provider' across industries. For more info: [www.rrahc.in](http://www.rrahc.in).

For Media Contact:  
RR Animal Health Care Ltd  
Ph: +91-40-485 38 485, +91 91000 74445  
E-mail: [corporate@rrahc.in](mailto:corporate@rrahc.in)



# HARTMANN INDIA LTD PRODUCT LAUNCH

## New Tray Launching

In a back-to-back event on 25th & 27th February, Hartmann India Ltd launched their New trays, "HIL-Medium" & "HIL-Large," at Hotel Golden Tulip, Panchkula, Haryana. More than 100 layer farmers from Barawala and more than 35 egg traders of the Barawala egg traders association attended this event. The event started with a lighting lamp & Ganesh Vandana, followed by a recorded message from Global CEO Mr. Torben Rosenkrantz-Theil explaining Hartmann's global influence. The company is committed to making sustainable egg packaging based on biodegradable molded fiber that can be recycled or disposed of eco-friendly. "Our definition of sustainability also reaches out to other areas, including forest stewardship, the climate, our employees and supplies, and our investors," he added.

Mr. Ernesto Schonbrod, President for Asia & America, shared his views through a recorded message. He stated that the lowest cost available nutritious product per capita egg consumption is growing in Asian countries, especially India. Therefore Hartmann's strategy has become a leader in molded fiber packaging for Eggs & Fruit in India. Our priority will be consistent quality with the best services per local customers' needs, always respecting the Indian way.

Then Mr. Himanshu Mahaur, MD of Hartmann India Ltd, explained the mission & vision of HUL. Hartmann's goal will always be to provide sustainable solutions to the customers' complex problems, thereby helping the environment and doing our part- Customer Focused, Community Helping in operating areas. "Our Aim Is Too Safe, Secure Eggs in Sustainable packaging," he added.

Dr. Mahendra Deshpande,



**Mr Himanshu Mahaur**  
MD, Hartmann India





General Manager - Sales for PAN India, delivered a corporate overview of the company's history, growth, and progress during the last 104 years. He also stressed the importance of environmental protection, stating that it is an integral part of the business model. Hartmann is working closely with customers to accommodate the demand for sustainable products in the retail industry; Hartmann was the first manufacturer to offer both FSC® -certified and CO2-neutral retail packaging.

Mr. Sompal Tanwar & his team gave an overview of Hartmann's SCM practices, production process & stringent quality parameters & customer infield service & support. Our valued customers who were available on the designated day launched the product. Dr. Mahendra & Mr. Jaspreet Singh presented & described the new product's uniqueness & technical specifications. They have also had interactions with customers about their queries. Many customers shared positive feedback about consistency in the products, availability of trays, and prompt services by the Hartmann Team. Finally, Mr. Jaspreet Singh gave a vote of thanks to all attendees & the event got over after cocktail dinner!



### About Hartmann India

Hartmann is the world's leading producer of molded-fiber egg packaging and a market-leading producer of fruit packaging in South America. It is one of the world's major producers of molded-fiber packaging technology. Brodrene Hartmann A/S, a world expert in molded fiber packaging with almost a century of expertise and understanding, acquired Mohan Fibre Pvt Ltd, Chandigarh, a 43-year-old company with India's largest production facility, in 2020.

This pact gives Hartmann a strong foothold in the lucrative Indian market, marked by favorable demographic trends and rising egg and fruit production. India's population expansion and urbanization will provide a stable basis for the retail industry's sustained growth and increased need for high-quality egg and molded packaging.

### Co-creation with a key customer

Since their acquisition a year ago, the Hartmann India team (HIL) has been working with their global technical team to develop new egg trays that meet the needs of Indian layer farmers and egg traders. Using an existing new product as a base for development, the HIL team co-developed new egg trays for 30 eggs (Medium & Large size). A customer participated in the egg-tray development as part of the customer intimacy program. As a result, not only did collaboration improve, but the new method was also proven to work in real-world manufacturing and transportation.

## Amiya Dharmapada Nath Bags Award For Man of Excellence



“ Amiya Dharmapada Nath, the vice president of JapfaComfeed India Private Limited, has bagged the most prestigious national award as “Man of excellence” for his professional achievements. The award was presented by the Indian Achiever Forums 2021-2022.

”

Indian Achiever Forums presents awards and recognition for promoting and inspiring businesses. Nath has over 22 years of experience in the Agri-food industry. His experiences include working 5 years in the vanaspati and edible oil industry at the start of his career as a chemist and conquering heights by working with JapfaComfeed for 17 years.

Initially, Amiya Nath started as National Sales Manager in JapfaComfeed, Paving the way to working as Business head and AVP and now successfully adding his place in Vice president – Operations.

JapfaComfeed has been involved in producing quality essential protein food to feed by establishing technology-oriented Feed mills, patent farms, Hatcheries, commercial farms, and health labs for animals and adding significant value for Agribusiness.

Amiya Dharmapada Nath took a chance and announced his achievement by saying, “I’m so honored and grateful to receive a national award as “Man of excellence” for my contribution on nation-building and outstanding professional achievement by Indian Achievers Forum 2021-2022. Thanks to all my well wishes for their continuous support to do something for society.”



## Leo Den Hartog Retires from The Director's Position at Nutreco



Leo den Hartog, the research and development director at Nutreco, has drawn a blank for his respective position by retiring after 20 years with the company. Leo has served as a factotum for Nutreco by looking after various departments such as the Quality Affairs Director and Director of Corporate Sustainability.

Hartog always held tight hands over his customers, which helped him in successfully establishing new departments and making them the epicenter of Nutreco; quality affairs, intellectual property, global validation, the food research centers in Spain and the Netherlands, and the Ingredient Research Center, are a few ones to be named.

He was the one who laid the foundation of the idea of collaborating with the universities. Today Nutreco is working with

almost 100 universities on various continents.

Leo is a hardcore, hardworking man; for the past 20 years, he has worked as a part-time professor at Wageningen University in the Netherlands. He has been teaching animal nutrition in a circular economy. He was yet continuing in this profile, though he will retire in a year or later.

Nutreco CEO Fulco van Lede has praised and applauded Leo and has wished flying colors for this new chapter that Leo will read and write in his majestic modality. Fulco van Lede said that “I’m delighted that he will remain a supervisory board member of Nutreco Nederland and a member of the judging panel for the Nutreco Young Researcher’s Prize, the second of which will be held this year.”

## Eggoz steps foot in south market



NUPA Technologies Pvt Ltd, a Gurgaon-based company under the brand name of Eggoz Nutrition, is all set to step its foot ahead in the south market. Eggoz Nutrition is now venturing into spreading its brand in Bangalore, thereby expanding its brand.

Eggoz business model has a unique offering that will not only help the South Indian farmers but will also help in structural growth in the economy.

The brand's popularity has seen an inclining trend in the northern regions having a close to 15 % market share in Delhi NCR. The brand has also generated over Rs.40 crore of annualized revenue; its estimation towards the end of the year is around Rs.60 crores.

The Co-founder of Eggoz Nutrition, Abhishek Negi, has expressed his view on such expansion, stating, "Eggoz Nutrition is thrilled to embark on this new journey in Bangalore with a highly motivated and innovative team. With this new beginning, we will provide the people of South India with our top-notch services and pave the way for great success. The goal for Eggoz Nutrition is to become the next unicorn brand, and with the help of our devoted team and hardworking farmers, I am confident that we will meet this goal very soon."

Eggoz Nutrition believes that this expansion will strengthen and align the company goals with individual and family needs for healthy eggs.

## First indian plastic waste neutral company: Dabur



Being one of the Ayurvedic FMCG Company, Dabur has strived hard and has become the first Indian plastic waste neutral company. In Financial Year 2020-2021, Dabur has collected, processed, and recycled over 27,000 metric tonnes of post-consumer plastic waste, thereby contributing towards the goal of a green environment.

Shahrukh A. Khan, the executive director- Operation of Dabur India Limited, emphasized this achievement and said, "It is a matter of great pride for the entire Dabur family, who have worked towards not just collecting plastic waste from our cities, towns, and villages, but also preventing the waste from reaching our landfills and oceans. This includes all types of plastic waste, from PET and HDPE bottles, PP caps and labels to multi-layered plastics and beverage cartons."

Dabur's team has set targets for collection, processing, and recycling post-consumption plastic waste. It has achieved its target of recycling 2,000MT of post-consumer waste three months ahead of schedule and aims to surpass future targets.

Additionally, the executive director added, "We work with government-registered recycling partners across the country and have taken progressive actions to reduce plastic waste in cities, towns, villages, while also raising awareness about plastic waste management within the community. The collected plastic waste is being sent to different Recyclers, Waste-to-Energy Plants, and Cement Kilns."

## IEC launches Vision 365 – 10 years Roadmap to increase egg production and consumption



Egg consumption worldwide has seen a steady trend and positive inclination. The international egg commission focuses on improving health worldwide as an egg, a source of protein, is unbeatable, both nutritionally and economically. Amidst the global pandemic, the demand for eggs has also risen for consumption to boost immunity.

### Introduction of Vision 365 plan

Vision 365 is a 10-year plan launched by IEC to start up the full potential of eggs by developing the nutritional reputation of the egg globally. An egg can be made essential for health and included in people's daily diet with the scientific approach.

Vision 365 plan was built on a firm belief in transforming the potential and reputation of eggs and promoting the power of eggs for doubling egg consumption by 2032.

### Statistic of egg consumption and increasing demand

Egg production in the country has significantly increased, and India's average per capita consumption of eggs is around 79 eggs per annum. India is currently the third egg-producing country accounting for 6% of the total production, after China and the USA.

An egg is a wholesome, nutritious food with high nutrient density, and it provides an average of 12% of the Daily protein and a wide variety of other



nutrients crucial for growth and good health.

### Need for increasing egg production

Globally, the average consumption is 161 eggs per person per year. One of the significant challenges currently imposed is the huge gap between increasing eggs demand and stagnant supply. To fulfil the current need, the production level needs to be increased 4.7 folds current production.

Eggs are not only used for raw consumption but also as a raw material to many other dairy products and secondary manufacturing sectors. The constant demand for eggs needs to be sustained by increased production.

### What can be done to increase production?

- Large breeding infrastructural farms need to be developed and constructed for poultry breeding for egg productions.
- Temperature control and health

monitoring to prevent diseases can reduce the rate of chicken mortality

- Intensive and semi-intensive use of modern technology-oriented mechanisms need to be undertaken.
- Industries engaged in egg production and supply can take subsidize under government schemes to boost production
- Availing nutrition and rich feed to the poultry for nourished and nutritious eggs.
- Encouraging and spreading awareness amongst small-scale poultry farmers to rear poultry through intensive farming, semi-scavenging (or semi-intensive), and scavenging through government schemes.

The production boosting can give immense opportunity to decrease the overall cost of production and increase profits at all levels.

## Fresh to home All Set For Business Expansion

The fish industry is at an all-time high, and FreshToHome, an online fish and meat retailer brand, is set to expand its business by increasing its product

offering after seeing such immense scope. As per its official statement on February 11, 2022, it is seeking to expand its product offering to more than 150 cities across Punjab, NCR, Uttar Pradesh, Rajasthan, Kolkata, Maharashtra, Karnataka, Andhra Pradesh, Telangana, Tamil Nadu, and Kerala.

Seeking expansion, the brand will launch 100 new Powered-By-FreshToHome stores with a sole goal of better customer experiences and also for empowering small businesses.

The founder, Shan Kadavil, on the expansion, stated his views, saying, "We are thrilled to expand to more than 150 towns and sign off on setting up Powered-By-FreshToHome's stores countrywide. These will serve as convenience stores to customers to offer the finest quality chemical and preservative-free products."

He also added, "Given the market's great potential and the rise in demand for quality meat and seafood, we aim to provide customers with products at affordable rates and at their convenience."

FreshToHome is an online platform for sourcing fresh seafood and meat from fishermen and farmers directly to end-users. The supply of meat and seafood goes through several quality checks to ensure freshness and quality product.





# Bio Challenges Need Strategic Bio Responses

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**Redefining  
the animal  
Health & Hygiene**

## EGG Daily and Monthly Prices of February 2022

Name Of Zone / Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Average	
<b>NECC Prices</b>																														
Ahmedabad	476	483	490	490	490	475	465	465	455	455	450	450	450	450	452	454	454	454	440	440	415	415	415	395	395	398	400	400	445.39	
Ajmer	452	458	460	460	445	430	425	405	405	400	395	391	391	450	400	400	400	390	370	355	350	350	343	343	346	351	351	395.39		
Barwala	454	458	460	460	447	435	430	410	410	410	410	395	395	395	398	398	398	385	385	370	360	360	360	345	345	348	351	351	397.25	
Bengaluru (CC)	475	475	475	485	485	485	470	455	455	440	440	430	430	435	435	435	435	435	435	435	425	415	415	405	390	390	390	390	438.04	
Brahmapur (OD)	446	459	467	467	467	467	454	437	432	427	427	417	417	417	417	423	423	423	413	413	413	378	378	373	363	369	375	375	419.18	
Chennai (CC)	485	485	485	485	485	485	485	470	470	470	450	450	450	450	450	450	450	450	450	450	450	440	440	440	425	425	410	410	455.18	
Chittoor	478	478	478	478	478	478	478	463	463	463	443	443	443	443	443	443	443	443	443	443	443	443	433	433	433	418	418	403	403	448.18
Delhi (CC)	477	477	477	477	477	467	460	455	430	430	430	430	425	425	425	425	425	425	410	400	390	380	380	380	365	365	370	370	423.11	
E.Godavari	427	439	446	446	446	446	435	420	415	405	405	405	405	405	405	408	408	408	398	398	398	365	365	355	345	350	355	355	402.07	
Hyderabad	423	430	433	433	433	420	410	400	400	385	385	385	385	388	392	395	395	385	385	370	360	360	340	330	335	340	340	340	384.89	
Ludhiana	454	454	459	459	454	451	441	436	422	411	411	402	402	396	396	399	399	399	383	371	366	356	356	356	346	346	348	348	400.75	
Mumbai (CC)	481	488	495	498	498	498	485	475	465	465	450	450	450	450	453	457	460	460	450	450	435	425	425	405	405	405	405	405	453.14	
Muzaffarpur (CC)	505	505	505	505	500	495	486	476	462	457	457	452	448	448	452	448	448	438	433	429	429	419	410	410	400	400	400	405	450.79	
Mysuru	470	470	470	480	480	480	465	455	455	440	440	430	430	435	435	435	435	435	435	435	425	415	415	405	395	395	395	395	437.50	
Nagpur	460	467	483	475	475	450	450	445	435	425	415	415	415	415	435	435	435	435	430	425	425	400	400	385	375	375	370	370	425.71	
Namakkal	460	460	470	470	470	460	460	460	440	440	425	425	425	425	425	425	430	430	430	430	430	430	405	405	405	380	380	380	432.86	
Patna	490	500	500	495	495	486	476	476	452	452	448	443	443	443	443	443	438	424	419	419	405	405	400	400	400	400	400	400	444.54	
Pune	485	490	495	500	500	500	490	480	470	465	455	455	455	455	457	459	460	460	445	435	420	410	410	395	385	390	395	395	450.39	
Ranchi (CC)	500	505	505	505	505	500	490	481	471	467	462	457	452	452	462	457	457	452	448	438	438	429	424	414	410	410	410	410	457.54	
Vijayawada	437	449	456	456	456	445	430	425	415	415	415	415	415	415	418	418	418	408	408	408	375	375	365	355	360	365	365	412.07		
Vizag	440	450	455	455	455	440	425	425	425	425	425	425	425	425	425	425	425	425	410	410	410	400	400	375	375	375	375	418.93		
W.Godavari	427	439	446	446	446	446	435	420	415	405	405	405	405	405	405	408	408	408	398	398	398	365	365	355	345	350	355	355	402.07	
Warangal	425	432	435	435	435	422	412	402	402	387	387	387	387	390	394	397	397	387	387	372	362	362	342	332	337	342	342	342	386.89	
<b>Prevailing Prices</b>																														
Allahabad (CC)	486	490	490	486	486	481	476	467	462	457	448	438	438	443	443	438	433	429	419	419	410	405	395	390	390	390	390	440.61		
Bhopal	460	465	470	470	470	470	455	445	435	425	415	415	415	415	415	425	427	427	415	405	405	390	380	370	370	370	370	420.14		
Hospet	435	435	435	445	445	445	430	415	415	400	400	390	390	395	395	395	395	395	395	395	385	375	375	365	350	350	350	350	398.04	
Indore (CC)	460	460	470	460	460	455	445	440	440	425	420	410	420	420	420	425	425	415	400	395	395	380	380	370	370	380	375	375	417.50	
Jabalpur	463	466	467	467	467	455	442	442	432	432	418	420	421	421	426	428	428	418	418	402	390	385	370	370	362	362	364	364	417.86	
Kanpur (CC)	476	490	490	490	476	467	457	448	448	438	429	429	429	429	429	433	433	429	414	414	395	395	395	381	381	381	381	381	429.93	
Kolkata (WB)	508	520	523	523	523	523	483	483	483	483	468	468	468	475	475	475	480	480	480	480	440	440	440	425	425	430	440	440	474.32	
Luknow (CC)	507	507	507	507	507	500	500	493	487	487	477	477	470	467	467	460	460	450	450	450	437	430	423	423	423	413	413	413	464.46	
Raipur	457	465	467	467	460	460	448	443	430	430	425	425	470	425	433	433	433	435	419	405	390	380	365	365	355	355	360	360	420.00	
Surat	480	490	495	497	497	485	485	475	465	465	450	450	450	450	452	455	455	455	440	440	420	400	400	400	400	400	400	400	448.25	
Varanasi (CC)	507	510	513	513	500	500	500	493	493	483	477	467	450	450	460	460	460	450	450	433	433	417	417	417	407	413	417	417	460.96	

# Editorial Calendar 2022

Publishing Month: <b>January</b> Article Deadline : <b>30<sup>th</sup>, Dec. 2021</b> Advertising Deadline : <b>3<sup>rd</sup>, Jan. 2022</b> Focus : <b>Disease Prevention</b>	Publishing Month: <b>February</b> Article Deadline : <b>30<sup>th</sup>, Jan. 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, Feb. 2022</b> Focus : <b>Nutrition Management</b>	Publishing Month: <b>March</b> Article Deadline : <b>28<sup>th</sup>, Feb. 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, March 2022</b> Focus : <b>Vaccination</b>	Publishing Month: <b>April</b> Article Deadline : <b>30<sup>th</sup>, March 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, April 2022</b> Focus : <b>Heat Stress</b>
Publishing Month: <b>May</b> Article Deadline : <b>30<sup>th</sup>, April 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, May 2022</b> Focus : <b>Cold Chain Mgmt.</b>	Publishing Month: <b>June</b> Article Deadline : <b>30<sup>th</sup>, May 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, June 2022</b> Focus : <b>Feed Production</b>	Publishing Month: <b>July</b> Article Deadline : <b>30<sup>th</sup>, June 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, July 2022</b> Focus : <b>Layers, Cages, Eggs</b>	Publishing Month: <b>August</b> Article Deadline : <b>30<sup>th</sup>, July 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, August 2022</b> Focus : <b>Genetics &amp; Breeding</b>
Publishing Month: <b>September</b> Article Deadline : <b>30<sup>th</sup>, August 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, September 2022</b> Focus : <b>Biosecurity</b>	Publishing Month: <b>October</b> Article Deadline : <b>30<sup>th</sup>, September 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, October 2022</b> Focus : <b>Winter Management</b>	Publishing Month: <b>November</b> Article Deadline : <b>30<sup>th</sup>, October 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, November 2022</b> Focus : <b>Environment Control</b>	Publishing Month: <b>December</b> Article Deadline : <b>30<sup>th</sup>, November 2022</b> Advertising Deadline : <b>3<sup>rd</sup>, December 2022</b> Focus : <b>Industry Outlook</b>

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