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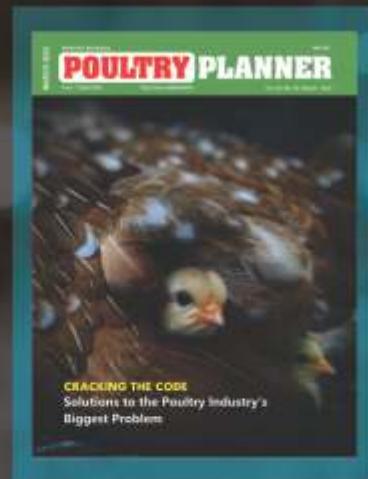
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# From the Editor's Desk



## Safeguarding Poultry Health: A Call for Effective Disease Prevention

Poultry farming stands as a vital pillar of global food security, providing a significant source of protein for millions worldwide. However, the threat of disease looms large over this industry, posing significant challenges to both producers and consumers. Effective disease prevention strategies are paramount not only for safeguarding poultry health but also for ensuring the stability of food supplies and protecting human health.

Preventing diseases in poultry requires a multi-faceted approach encompassing biosecurity measures, vaccination protocols, and proactive management practices. The implementation of these strategies demands collaboration among stakeholders, including farmers, veterinarians, government agencies, and research institutions.

First and foremost, robust biosecurity measures are crucial for preventing the introduction and spread of diseases within poultry flocks. Farms should enforce strict protocols to control access, limit movement of personnel and vehicles, and sanitize equipment and facilities regularly. Additionally, maintaining adequate distance between poultry houses, implementing pest control measures, and securing feed and water sources are essential components of biosecurity.

Vaccination plays a pivotal role in disease prevention by bolstering the immune system of poultry against specific pathogens. Vaccination programs should be tailored to the prevalent diseases in each region and administered according to established schedules. Furthermore, continuous monitoring of vaccine efficacy and disease prevalence is necessary for making informed decisions regarding vaccination strategies.

Furthermore, proactive management practices such as proper nutrition, adequate housing, and stress reduction contribute to enhancing the overall health and resilience of poultry flocks. Farmers should prioritize hygiene and cleanliness in housing facilities, provide balanced diets supplemented with essential nutrients, and minimize environmental stressors to bolster the immune response of birds.

Government agencies play a crucial role in supporting disease prevention efforts through regulatory oversight, surveillance programs, and research funding. Policies should be enacted to enforce biosecurity standards, facilitate access to vaccines and diagnostic tools, and incentivize adoption of best practices among poultry producers. Moreover, investment in research and development is essential for advancing our understanding of poultry diseases, developing innovative control measures, and improving the efficacy of existing vaccines.

Education and outreach initiatives are also vital for empowering poultry farmers with the knowledge and skills necessary to implement effective disease prevention strategies. Extension services, training workshops, and online resources can provide valuable information on biosecurity practices, vaccination techniques, and disease management protocols.

In conclusion, effective disease prevention is imperative for maintaining the health and productivity of poultry flocks, ensuring food safety, and safeguarding public health. By implementing comprehensive strategies encompassing biosecurity, vaccination, and proactive management practices, we can mitigate the impact of diseases on poultry production and enhance the resilience of the poultry industry in the face of evolving threats. Collaboration among stakeholders, backed by strong governmental support and investment in research, is essential for achieving lasting success in disease prevention and securing the future of poultry farming.

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# Disease Prevention in Poultry: Key Strategies For A Healthy Flock



**Karishma Choudhary and Vinod Kumar Palsaniya**  
M.V.Sc. (LPM), CVAS, Navania, Vallabh Nagar, Udaipur

## Introduction

The production of meat and eggs high in protein is largely derived from poultry farming, which is an essential part of the world's food chain. However, the risk of infections makes it difficult to keep flocks of chickens healthy all the time. Infectious diseases in poultry are mainly associated with large financial losses. Epidemics can have disastrous effects, such as decreased food safety and financial losses. To protect the health of their birds and the long-term viability of their businesses, poultry farmers must thus put into practice efficient disease prevention measures.

## Realizing the Diseases in Poultry

Poultry are susceptible to a variety of diseases caused by viruses, bacteria, fungi, parasites, and other pathogens. These diseases can spread rapidly within a flock and even between farms, posing significant challenges to control and containment. Common poultry diseases include avian influenza, Newcastle disease, infectious bronchitis, infectious bursal disease, coccidiosis, and many others.

## Common Poultry Diseases

## Key Strategies for Disease Prevention

### 1. Biosecurity Measures:



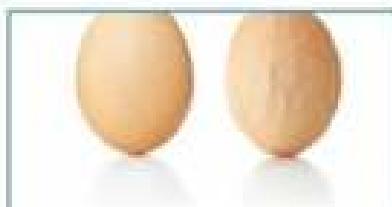
**Infectious Laryngotracheitis (ILT) in Chickens**



**Avian Encephalomyelitis (AE) in Chickens**



**Infectious Bursal Disease (Gumboro) in Poultry**



**Infectious Bronchitis in Layer Chickens**



## Avian Influenza in Poultry



## Avian Leukosis Virus (ALV) in Laying Hens



## Chicken Anemia Virus (CAV)



## Marek Disease in Layer Chickens

Implementing robust biosecurity measures is fundamental to prevent the introduction and spread of diseases within poultry flocks. This includes controlling access to farms, restricting visitors, and maintaining strict hygiene protocols for personnel, equipment, and vehicles entering the premises.

### 2. **Vaccination Programs:**

Vaccination is a critical tool for protecting poultry against infectious diseases. Developing a comprehensive vaccination program tailored to the specific risks in the region and the type of production system is essential. Regularly scheduled vaccinations help to boost the birds' immune systems and reduce the likelihood of disease outbreaks.

### 3. **High-Quality Nutrition:**

Providing poultry with a balanced and nutritious diet is essential for maintaining their overall health and resilience against diseases. Nutritional deficiencies can weaken the immune system and make birds more susceptible to infections. Working with nutritionists and using high-quality feed ensures that birds receive the essential nutrients they need to thrive.

### 4. **Optimized Housing Conditions:**

Creating an environment that promotes good health and well-being is crucial for disease prevention. Proper ventilation, adequate space, and appropriate temperature control help to minimize stress and reduce the risk of respiratory infections and other health issues. Regular cleaning and disinfection of housing facilities also play a vital role in preventing the buildup of pathogens.

### 5. **Monitoring and Surveillance:**

Regular monitoring of poultry health through observation, clinical examinations, and diagnostic testing is essential for early detection of diseases. Implementing surveillance programs allows farmers to identify potential threats promptly and take appropriate action to prevent further spread within the flock.

### 6. **Quarantine and Disease Management:**

Implementing quarantine measures for newly acquired birds or birds returning from exhibitions or shows helps

to prevent the introduction of diseases into existing flocks. In the event of a disease outbreak, prompt isolation of affected birds, proper sanitation, and adherence to veterinary guidance are critical for containing the spread and minimizing the impact on the entire flock.

### 7. **Education and Training:**

Providing education and training to poultry farmers and workers on disease prevention, biosecurity protocols, and best management practices is essential for promoting a culture of awareness and accountability. Equipping personnel with the knowledge and skills to recognize and respond to potential health threats enhances the overall effectiveness of disease prevention efforts.

### **Conclusion**

Preventing diseases is a complex task that calls for careful management, proactive planning, and constant attention to detail. Poultry producers can reduce the danger of disease outbreaks, protect the health and welfare of their flocks, and produce high-quality poultry products that consumers throughout the world can rely on if they adopt comprehensive disease prevention techniques. Adopting a proactive stance towards disease prevention safeguards the livelihoods of chicken producers and enhances the resilience and sustainability of the worldwide poultry sector overall.

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# BioEmulsin DS – Not Just Another Emulsifier

Energy represents a significant cost factor in high-performance animal diets. Fats and oils, owing to their high energy density, play a crucial role as energy sources in feed formulation. Enhancing the energy efficiency of these raw materials holds considerable economic significance. Nutritional emulsifiers offer a viable solution to enhance fat digestibility, thereby increasing energy efficiency. This, in turn, leads to reduced feed costs and contributes to a more economical and sustainable approach in animal production.

## **Fat: One of the most intricate nutrients**

Fat digestion involves triglycerides of various fatty acid profiles, termed fats or oils. Free fatty acids exist when fatty acids are unbound to glycerol. These lipids serve as the primary energy source for animals, boasting the highest caloric value among nutrients. The energy derived from dietary fat relies on its digestibility; higher digestibility yields more available energy. Fat digestibility in animals correlates with fat characteristics, amount added to the diet, and animal-specific factors like age. Young birds, for instance, possess limited natural lipase and bile salt production, resulting in restricted fat digestion. Emulsifiers added to the diet can enhance fat digestion. The process of fat digestion involves several stages. Initially, large fat globules undergo emulsification in the watery gut environment, facilitated by peristaltic movement. Bile salts act as natural emulsifiers, aiding the mixing of typically immiscible fat and water. This process forms

smaller fat droplets to increase surface contact for the enzyme lipase. Produced by the pancreas, lipase functions to break down the fat.

Fats and oils consist of three fatty acids and glycerol, forming esters. Lipase hydrolyzes these esters, releasing fatty acids and one monoglyceride. Subsequently, micelles are formed—water-soluble aggregates of lipid molecules containing polar and non-polar groups. These molecules arrange in micelles with polar groups on the outside interfacing with the aqueous phase, while non-polar components create the inner lipid core.

Emulsifiers like bile salts and monoglycerides play a role in micelle formation. Upon encountering the microvillous membrane, these micelles are disrupted, allowing the fatty acids to be absorbed by the lipophilic cell membrane.

## **Nutritional emulsifier**

Nutritional emulsifiers play a crucial role in the digestion of fats and oils. These compounds are formed from esters comprising three fatty acids and glycerol, with lipase catalyzing the release of two fatty acids and one monoglyceride through hydrolysis. Micelles, water-soluble clusters of lipid molecules encompassing polar and non-polar segments, are subsequently formed. Their arrangement involves polar groups on the exterior, interacting with the aqueous phase, while non-polar components form the micelles' inner lipid core.

Natural emulsifiers like bile salts and monoglycerides aid in micelle



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formation. However, their efficacy can be limited in facilitating fat digestion, particularly in young animals with restricted bile salt production. Additionally, the nature of dietary fat can hinder digestibility; fatty acid mixtures high in free fatty acids tend to lack monoglyceride formation, thus reducing emulsification.

Characteristics of fatty acids also impact micelle formation and subsequent digestibility. Long-chain unsaturated fatty acids and monoglycerides form micelles efficiently, while saturated fatty acids, due to their lower polarity, exhibit reduced micelle-forming abilities. Consequently, saturated fatty acids, prevalent in animal fats, are generally less easily digested compared to unsaturated fatty acids found in vegetable fats.

Higher levels of free fatty acids and certain characteristics of dietary fats can limit digestibility. Exogenous nutritional emulsifiers aid in enhancing digestibility, particularly in less digestible fats, and their effectiveness is more pronounced with higher levels of added fat. However, even in highly digestible fats, positive effects from these emulsifiers have been observed in various cases.

#### **BioEmulsin DS-The novel natural nutritional emulsifier**

BioEmulsin DS is not just like another conventional emulsifier, BioEmulsin DS is a nutritional emulsifier that plays a pivotal role in enhancing fat digestibility among poultry birds. BioEmulsin DS provides benefits beyond emulsification and ensures optimized fat utilization therefore makes poultry flock more fat and energy efficient.

**Significant and higher production of bile secretions improves fat emulsification:** Supplementation of BioEmulsin DS physiologically stimulates significantly higher bile acid production. Bile acids are

natural surfactants that facilitates emulsification of bigger fat globules into micro fat droplets. BioEmulsin DS help break down larger fat globules into smaller droplets. These tiny droplets offer a larger surface area, making it easier for digestive enzymes to access and break down fats into absorbable components.

#### **Significant and higher production of pancreatic lipase enzyme enhances fat digestibility:**

Pancreatic lipase plays important role in fat digestion.

Supplementation of BioEmulsin DS stimulates release of pancreatic lipase. However, pancreatic lipase cannot hydrolyse fat into fatty acids until bile pool available for activation of lipase.

**Optimized Utilization:** BioEmulsin DS ensures optimized absorption of fats of feed ingredients and other lipids/oils added to the poultry feed as supplements. This aids in the absorption of fats and fat-soluble vitamins by the intestinal lining, thereby enhancing overall fat utilization.

**Performance Boost:** Improved fat digestibility contributes to better overall health and performance in birds by ensuring more efficient use of dietary energy. This leads to enhanced growth, development, and energy balance.

**BioEmulsin DS supplementation maintains bile pool** – bile is available for fat emulsification and for lipase activation, therefore BioEmulsin facilitates better fat digestion and conversion of micro fat droplets into SCFA & LCFA.

**Absorption** – BioEmulsin DS ensures optimized absorption of fats of feed ingredients and other lipids/oils added to the poultry feed as supplements. For the optimum absorption of Long chain fatty acids (LCFA), bile acts as carrier.

To summarize, BioEmulsin DS acts

on two target organs – Liver and Pancreas and provides comprehensive and intricate mode of action of fat emulsification, digestion, absorption and assimilation. BioEmulsin DS is designed in such a way that it trigger higher physiological production of bile and stimulates activity of pancreatic lipase enzyme.

BioEmulsin DS@250g/ton of feed is a one stop solution for complete replacement of synthetic or natural emulsifiers, lipase enzymes and bile acid extracts from other monogastric species.

#### **Conserving Energy, Cutting Costs**

Adding BioEmulsin DS to a diet can offset a decrease in dietary energy. If a diet can be structured with lower energy content, it translates to reduced use of costly fats and oils, thereby lowering overall expenses. The impact on cost hinges on nutritional restrictions in the formula and fluctuating raw material prices, which vary by region and change over time. BioEmulsin DS allows nutritionists to formulate diets with reduced energy content while maintaining performance levels. This adjustment translates to reduced feed expenses and promotes a more cost-effective and sustainable approach in animal production.

#### **Conclusion**

Energy stands as a significant cost factor in high-performance animal diets. Fat is the main concentrated energy source within animal feed. A good fat digestibility is very important in order to lower the feed cost. Therefore, dietary emulsifiers are added to animal feed and aid to increase the digestibility of fat and thus the energy efficiency. Employing nutritional emulsifiers enhances fat digestibility, thereby amplifying energy efficiency. BioEmulsin DS usage is highly recommended to make the poultry flocks more fat and energy efficient.

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# Harmful Gases From Poultry House



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A report by the United Nations Food and Agriculture Organization (FAO), estimates that 18 percent of annual worldwide green house gases emissions, are attributable to livestock viz: cattle, buffalo, sheep, goats, camels, horses, pigs and poultry that cause global warming. Globally the sector contributes 7.1 billion tones CO<sub>2</sub> equivalent of global greenhouse gas emissions. Although it accounts for only 9 percent of global CO<sub>2</sub>, it generates 65 percent of human related nitrous oxide (N<sub>2</sub>O) and 35 percent of methane (CH<sub>4</sub>).

As far as Poultry sector is concerned it contributes both directly and indirectly to green house gases through the emissions of different gases viz: ammonia, carbon dioxide, methane, nitrous oxide as well as dust, pathogens and other micro-organisms, which affect the quality of the air in the poultry house which ultimately has huge effect on the health of poultry birds, humans and the surrounding environment. Therefore it is important to control the emission of these harmful gases as low as possible so that it should not affect the health of birds, workers within the house as well as the environment.

There are so many reasons for the production of these gasses in commercial poultry farm. The majority of green house gases emissions generated from the house are because of poor management in poultry house, mainly overcrowding, excess wetting of litter material,

unorganized ventilation system, air temperature, air movement above the litter surface, air penetration through the litter, litter temperature, humidity, moisture, pH, feed composition and manure handling practices in the poultry farms along with feed production and from the breakdown of faecal matter, which results in the production of these hazardous gases. Following are the some important green house gases.

## **Harmful Gases generated from poultry house:**

### **Ammonia:**

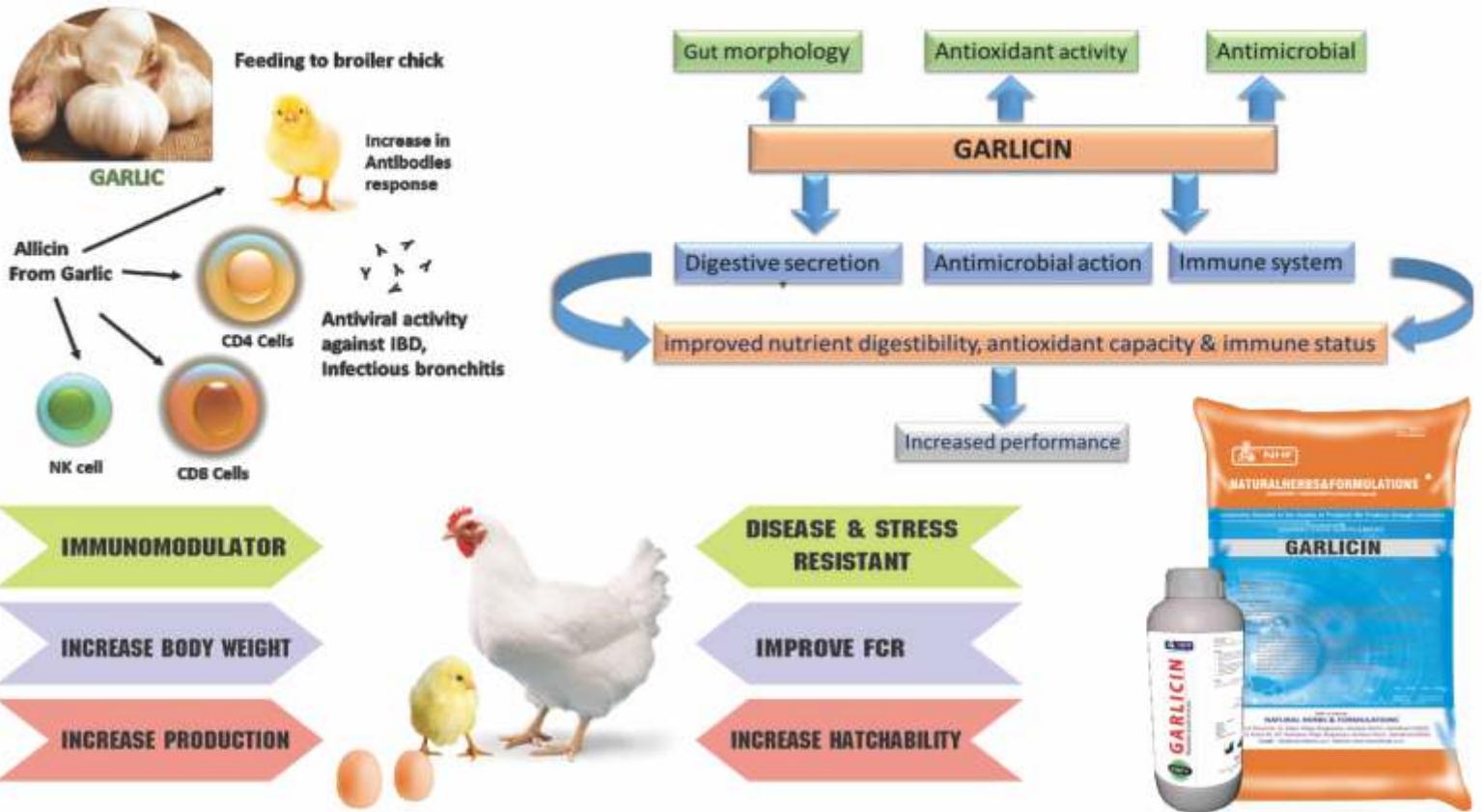
Ammonia (NH<sub>3</sub>) is one of the important gas produced in the poultry farm. It is generated mainly during bacterial decomposition of protein and urea under aerobic and anaerobic conditions. Besides this other reasons are like, wet litter, humidity, improper ventilation, poorly maintained water in drinkers, high bird stocking density and flocking behavior. The amount of ammonia emissions increases in advance stage of birds and with the age of litter, which leads to the reduction in the feed intake and poor bird weight gain, decreased egg production as well as egg quality, damages the respiratory tract. It also increases the susceptibility of bacterial and viral diseases. According to one report the average ammonia emission rate per bird was 19.7 and 18.1 mg.h<sup>-1</sup> in the summer and winter, respectively (Calvet et al., 2011).

### **Methane:**

Chickens release negligible amount

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of methane during their digestion process. Methane emissions are all associated with poultry house. Droppings of chickens contribute to generation of atmospheric methane especially when decomposition of the faecal matter occurs under the anaerobic condition and manure application. Its production increases with increase in temperature. As per the report the average CH<sub>4</sub> emissions was found 0.44 mg.h<sup>-1</sup> per bird in summer and 1.87 mg.h<sup>-1</sup> per bird in winter (Calvet et al., 2011).

### **Nitrous oxide**

Gaseous nitrogen compounds are known to cause severe environmental problems. Nitrous oxide (N<sub>2</sub>O) is a very potent greenhouse gas. The non-ruminant sector is a minor N<sub>2</sub>O emissions contributor compared with ruminant N<sub>2</sub>O emissions. The poultry industry is the largest direct N<sub>2</sub>O producer of the non-ruminant livestock industries, contributing 92.8% of the total non-ruminant N<sub>2</sub>O emissions (Toit Du C.J.L et al., 2013). The production of N<sub>2</sub>O from poultry manure depends on faeces composition, microbes and enzymes involved and the conditions after excretion. Average N<sub>2</sub>O emissions was found 1.74 and 2.13 mg.h<sup>-1</sup> per bird in summer and winter, respectively (Calvet et al., 2011). It was found that daily emission of 46 mg N<sub>2</sub>O per chicken and for whole 60 days period 2.8 kg per bird (Meda et al., 2011). The actual rate of N<sub>2</sub>O emission is highly dependent on the management strategies implemented on a farm.

### **Carbon dioxide**

Production of CO<sub>2</sub> is mainly due to the use of heating material especially propane in broiler and

pullet houses during brooding and cold weather. However it is also seen that major part of CO<sub>2</sub> seemed to have its origin from bird respiration with assumed production of approx. 147 kg of CO<sub>2</sub>.h<sup>-1</sup>. CO<sub>2</sub> emission was most affected by chickens towards the end of the fattening period taking dominance over the process of natural gas burning by heaters. The mean CO<sub>2</sub> emission from the chicken house ranged between 120 and 247 kg.h<sup>-1</sup> in the first quarter of periods and between 325 and 459 kg.h<sup>-1</sup> in the last ones. After the evaluation of CO<sub>2</sub> emission rates were 3.84 and 4.06 g.h<sup>-1</sup> per bird in summer and winter, respectively (Calvet et al., 2011).

### **Remedies:**

The goal for most of the poultry producers is either to avoid, to control or to minimize the gases production in poultry house so that to avoid its impacts on bird health and performance. There are some important measures which can help to reduce the emission of greenhouse gases to some extent from poultry house.

Primary action is to modify poultry housing on scientific lines, efficient management of litter material used and proper handling and disposal of manure. The levels of gases in poultry housing have been closely associated with manure management. The increase in manure organic content raises N<sub>2</sub>O emissions. Separation of manure solids lowers the organic content of liquid manure, which generally results in lower emissions of N<sub>2</sub>O. Reducing dietary protein by 3-5% may cause a reduction of 60% or more in total nitrogen excretion from broilers and laying hens.

Diet management is important to control ammonia production in

poultry house, so proper provision of a balanced and complete diet is of the highest importance to prevent ammonia production and increase broiler performance and feed efficiency. A well-balanced diet contains highly digestible ingredients and functional feed additives that can improve the digestibility of nutrients in the small intestine of birds.

Proper stocking density is important to limit excessive moisture in the poultry house by maintaining the proper ventilation for minimal production of ammonia. However, this should only be in accordance with the climate and temperature of the poultry house. Proper handling and disposal of poultry manure which includes litter material is also help to reduce the generation of harmful gases. Scientific housing and feeding management is very important to combat this problem. Poultry owners must continually seek advances in housing technology to improve indoor air quality of their farms.

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# EFFECTIVE MYCOPLASMA MANAGEMENT IN POULTRY BY PROVEN ANTIMYCOPLASMAL DRUGS

## INTRODUCTION

Avian mycoplasmosis was primarily described in turkeys in 1905 and in chickens in 1930. There are 23 named species of mycoplasma recovered from avian sources but only two of them are established pathogens for domestic poultry as *Mycoplasma gallisepticum* (MG), *Mycoplasma synoviae* (MS) causes 'Chronic Respiratory Disease'. Mycoplasma pathogens cause upper respiratory and locomotory illness in chickens and other avian species. They are responsible not only for clinical diseases but also for decreased weight gain, lowered feed conversion efficiency, reduced hatchability, and downgrading at slaughter (Bradbury, 2001).

*Mycoplasma gallisepticum* (MG) infection in the commercial poultry industry is common in many areas. Despite the great efforts by poultry breeding companies made towards eradication of pathogenic mycoplasmas from poultry flocks, still *Mycoplasma gallisepticum* infection is of continuing economic concern in commercial broiler breeder chicken flocks. Failure in eliminating the disease in grand parent (GP) stock, it persists in broiler breeders and broilers through vertical transmission. The continued presence of MG in commercial broiler breeder flocks suggests that efforts at eradication were not highly successful. This organism is smaller than common bacteria and larger than viruses, but lacks a cell wall. This characteristic makes MG extremely fragile (no cell wall) and difficult to culture (specialised growth requirement) and host adapted (avian only).

Respiratory tract infections are of great importance in poultry industry, causing heavy economic losses. *Mycoplasma gallisepticum* and *Mycoplasma synoviae* are the most pathogenic organisms of the respiratory tract.

Other respiratory tract infections include both viral pathogens (Newcastle disease virus, Infectious bronchitis virus, avian influenza virus) and bacterial pathogens (*Salmonella pullorum*, *Escherichia coli*, *Avibacterium paragallinarum*, etc) cause disease independently and in association with each other and causes Complex Chronic Respiratory Disease (CCRD).

Mycoplasma control for any companies requires integrated approach involving diligent biosecurity, animal husbandry & disease surveillance. The consequences of wide spread infection in breeder operation can be devastating result of both as direct and indirect losses occurring throughout the production cycle (Ley, 2003).

## TRANSMISSION

MG and MS can spread through horizontally and vertically route of susceptible birds with infected chickens; spread may also occur by contaminated airborne dust, droplets, or feathers (Ley and Yoder, 1997). It can be transmitted through the chicken hatching egg to the offspring. MG has been isolated from the oviduct of infected chickens and semen of infected roosters (Yoder and Hofstad, 1964).

## CLINICAL SIGN

Both diseases are economically important, egg transmitted and hatchery disseminated diseases. They lead to tremendous economic losses in poultry production as a result of decreased hatchability and egg production, reduced quality of day-old chicks, reduced growth rate. Chicken showed swelling of the facial skin, and the eyelids, increased lacrimation, congestion of conjunctival vessels, and respiratory rales.





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*Mycoplasma synoviae* (Ms) infection is usually known as infectious synovitis, an acute-to-chronic infectious disease for chickens involving primarily the synovial membranes of joints and tendons sheaths. However, during recent years, MS has less frequently been associated with synovitis but more frequently associated with airsacculitis in chicken.

### PATHOGENESIS

It is presumed that MG enters the respiratory tract by inhalation of aerosols or via the conjunctiva and attaches to mucosal cells by its well-organized terminal organelles, which remains and spread in respiratory system.

As MG & MS are exhibiting with no cell wall, it is readily killed by most of the disinfectants, heat, and sunlight, and does not survive for prolonged periods outside the host. MG can remain viable

1. Chicken faeces for 1-3 days at 20°C,
2. Muslin cloth 3 days at 20°C or 1 day at 37°C,
3. in egg yolk 18 week at 37°C or 6 week at 20°C.

It only remains viable in the environment, outside the chicken, for typically up to 3 days. For this reason, MG is fairly easy to eliminate on single age, all-in all-out poultry farms Since MG can be transmitted vertically. Establishing the MG-clean status of breeder flocks and maintaining that status can be accomplished by participation in control programmes. An MG eradication programme may be initiated by treatment of breeders and their hatching eggs to reduce egg transmission. Attempts to eliminate egg transmission of MG by medication of breeder flocks or their progeny with antimycoplasmal prevention drug have generally been able to produce considerable reduction in rate of MG infection but generally were not adequate to obtain entirely infection-free flocks. Previously successful methods were the treatment of hatching eggs with heat and/or antimycoplasmal. For heat treatment eggs were gradually heated in a forced-air incubator to reach an internal temperature of 46.10C over 12-14 hour and then allowed to return to room temperature (Yoder, 1970). Hatchability was sometimes reduced 8-12%, but MG and MS appeared to be inactivated. Egg dipping with a temperature or pressure differential has been used by several researchers as a means of getting antibiotics into hatching eggs to eliminate egg transmitted MG (Alls et al., 1963; Hall et al., 1963; Stuart and Bruins, 1963).

### LOSSES CAN OCCURS AS RESULT OF

1. Decreased egg production
2. Decreases egg hatchability
3. Decreased day old chick quality and chick viability
4. Increase chick mortality
5. Higher FCR and low weight gain
6. Costly control measures involving biosecurity, vaccination & medication.

Control of pathogenic avian mycoplasma can consist of one of three general approaches, according to Kleven (2008): The mycoplasma infection are transmitted both horizontally and vertically and it's remained in the flock constantly as sub clinical form. To control MG infection in broiler breeder, laying hens and commercial broilers chicken the major specific focus is given on vaccination and medication.

### 1. MAINTENANCE OF FLOCKS, WHICH ARE FREE OF INFECTION.

To keep a flock free of infection is difficult, especially in areas where large populations of chickens have grown up, as the industry has expanded. To maintain freedom from mycoplasma requires a mycoplasma free source, on a single age, 'all in all out' site, with good biosecurity and an effective monitoring system.

### 2. CONTROL BY VACCINES.

The use of mycoplasma vaccines in breeding & laying hens has grown over recent years to reduce the impact of infections, but these can confuse the usual serological monitoring systems. They may control an infection in the chicken clinically but there is still a potential risk of vertical transmission to the egg and chick. Vaccination could not completely prevent the occurrence of EAA, although a significant reduction of EAA egg production (approximately 50%) was recorded. Moreover, a delay in the onset of egg production was observed in the vaccinated birds (Feberwee et.al. 2009).

### 1. KILLED/INACTIVATED VACCINES

- These are *M. gallisepticum* killed organisms with oil emulsion adjuvants to protect the birds from infection with virulent *M. gallisepticum*.
- Several adjuvant enhanced bacterin vaccines but they are expensive and administration is difficult because they need to be injected twice with a 4-6 week interval (Ley, 2003).
- Killed vaccines have been shown to reduce, but not eliminate the *M. gallisepticum* infection and are not effective in long term control of infection in multiple age farms.
- Killed vaccination did not reduce horizontal spread of *M. gallisepticum* (Levisohn et. al., 2000).
- These are more stable and safer than live vaccine.



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**Clostridium Perfringens**  
Type A, C, B, D, E

**Staphylococcus Aureus**

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BROILERS, LAYERS  
& BREEDERS**

## 2. LIVE/ATTENUATED VACCINE

- There is three type of live vaccines is available for *M. gallisepticum* viz.

### A. CONNECTICUT F-STRAIN

#### B. MG 6/85 STRAIN

#### C. TS-11 STRAIN (TEMPERATURE SENSITIVE MUTANTS)

### A. CONNECTICUT F-STRAIN

- Live F-strain *M. gallisepticum* vaccine is a relatively mild strain that originate from the Connecticut F strain of United States. Despite the advantages of the f-strain vaccine it has many of the disadvantages of the inactivated vaccines.
- MG free chickens tend to lay better than F-strain immunised ones.
- F-strain is too virulent for young chicks.
- F-strain is capable of lateral spread in the flock.
- F-strain does not completely block trans ovarian transmission when birds are challenged with virulent MG.

### B. MG 6/85 STRAIN

- The 6/85 strain of MG is in lyophilised form and originate from United States.
- It has low virulence in chicken.
- Vaccinates were protected against airsacculitis and colonisation of the trachea was detectable from 4 to 8 weeks after vaccination (Ley, et. al., 1997).

### C. TS-11 STRAIN

- ts-11 is a live chemically induced mutant strain of MG is in frozen form and developed from Australian MG field isolate (Whithear et. al., 1990a).

## 3. CONTROL BY SPECIAL ANTIBIOTICS

Medication of a flock but can prevent subsequent losses in breeders & laying hens. MS Infections could be treated with antimicrobial use in breeders, layers flock and eggs to prevent vertical transmission.

Control of MG and MS infection in broiler chicken by medication is the most practical way to minimize the transmission of disease and economic losses.

- The most important macrolide agent used for treatment and control of mycoplasma infection is Tilmicosin Phosphate.
- Tilmicosin is a broad-spectrum bacteriostatic synthesized from tylosin molecule which is having 75 percent more intra alveolar concentration in the lungs tissue to work efficiently against mycoplasma as organism remain intracellular in the cell and tissue.

### IN BROILER BREEDER & COMMERCIAL LAYERS

- It is very important to treat chicks from day first of life to combat against mycoplasma, Tilmicosin Phosphate-25% @ dose rate of 15-20mg/kg body weight through drinking water for 3 successive days every 5 weeks up to for 16th to 20th weeks.
- After 20th or 24th week incorporate Tiamulin through feed as per recommendation of veterinarian.
- It is emphasized to follow best antimycoplasmal drug prevention programme through feed.

### IN COMMERCIAL BROILERS

- It is suggested to use Tylosin Tartarate 100% through drinking water for first 3 days @ dose rate of 65 mg/kg of BW.
- In high risk or known source of infected breeders it is suggested to use Tilmicosin Phosphate-25% through drinking water for first 3 days @ dose rate of 15mg/kg of BW.

The medication can be repeated on a monthly, three weekly or two weekly basis depending on the mycoplasma status of the flock or the 'risk' of breakdown from the proximity of infected neighbours.

### Macrolide & Pleromutilin group of antibiotics is drug of choice

SL. NO.	Active Ingredients	Dosage	Mode of Administration
1	<b>Pharmasin</b> (Tylosin Tartarate-100%A)	75-110 mg/kg of body wt.	Water
2	<b>Tylovet Premix</b> (Tylosin Phosphate 10%)	500-1000 ppm/Ton of feed	Feed
3	<b>Inj Tylovet B</b> (Tylosin Base-20% Injection)	10-15mg/kg of BW	Intramuscular
4	<b>Vetmulin-10 %</b> (Tiamulin hydrogen Fumarate-10%)	15-30 mg/kg of body wt.	Feed
5	<b>Vetmulin-80 %</b> (Tiamulin Hydrogen Fumarate-80%)	15-30 mg/kg of body wt.	Feed & Water
6	<b>Rodotet</b> (Tiamulin HF 3.3 % + CTC 10%)	1-1.5/ Ton of feed	Feed
7	<b>Tilmovet liquid</b> (Tilmicosin Phosphate-25%)	15-20 mg/kg of body wt.	Water

To know more, please contact Huvepharma technical team

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\*1 FCR point represent third/last decimal point of 1000

\*Majority of field trials were conducted at same farm with multiple sheds in integrations across various geographical locations and at different time of the year. Some of the integrators were generous in sharing complete production indices while others communicated the summary of the trial results. In the field trials, Improval™ MS was compared with antibiotic/probiotic/antibiotic + probiotic/probiotic + prebiotic control. Detailed reports available on request.

# Strong Presence of INDIAN HERBS in Kolkata International Poultry Fair, 7- 9 February, 2024, at Eco Park, Kolkata, WB



**INDIAN HERBS**, pioneer and global market leader in Herbal Animal Health Care Products Industry since 1951, made an impressive mark at the prestigious Kolkata International Poultry Fair-2024 held at Eco Park, Major Arterial Road (South-East), Action Area II, New town, **Kolkata, West Bengal from 7th to 9th February, 2024**. The stall was inaugurated by Mr. Madan Mohan Maity, Chairman of NECC Eastern Zone, Mr. J.S. Dhull, Managing Director of Skylark Group, and Mr. Shetty, Chairman of Karnataka Breeders Welfare Association, alongside other distinguished personalities. Our strong sales and marketing team headed by Mr. Paramartha Roy, National Sales Manager, **Indian Herbs** gave a warm welcome to our international patrons and visitors from India, Nepal and Bangladesh.

The **INDIAN HERBS** booth at the event saw an impressive turnout of distinguished business partners, customers, consultants, and poultry nutritionists, creating an atmosphere of remarkable success and grandeur. Demonstrating a steadfast dedication to innovation, **INDIAN HERBS** showcased its wide range of innovative phyto-genic feed supplements and healthcare products. Embracing a comprehensive approach that blends 'Traditional Glory and Modern Science,' the company has been at the forefront of advancements in phyto-genics, transforming 'Herbalism' into a dynamic and scientifically proven science. **INDIAN HERBS** offers distinctive phyto-genic alternatives renowned for their superior effectiveness, affordability, and absence of side effects or residual toxicity across various

animal species for over seven decades.

At the event, we proudly introduced our range of phyto-genic products and innovations. Our latest offerings, BioEmulsin DS, a natural nutritional emulsifier, and PhytoVita, the vitagene regulator, have received exceptional acclaim, stemming from extensive research efforts. We showcased a diverse array of natural alternatives in segments such as vitamins, herbal respiratory supplements, anti-stressors, immunopotentiators, liver tonics, metabolic stimulants, growth promoters, gut enhancers, and adaptogens for different species.

Our recent advancements include evaluating products using advanced techniques, delving into not only their safety and efficacy but also comprehending their mechanisms through cutting-edge molecular sequencing technology. Through collaborations with top-tier institutes in over 30 countries, we have intensified our efforts to enhance our understanding of our products. What sets **INDIAN HERBS'** phyto-genic solutions apart is the advantageous combination of multiple plant-derived bioactives and phyto-compounds, resulting in synergistic effects that optimize animals' genetic potential, promote growth, boost immunity, and aid in disease control. Leveraging advanced scientific techniques, we have successfully deciphered the safety, efficacy, and mechanism of action of these products.

With a portfolio comprising over 230 products catering to various animal categories, **INDIAN HERBS** maintains strict adherence to quality standards and regulatory

compliances. Our core strength lies in our robust research and development initiatives, supported by state-of-the-art R&D and QC laboratories equipped with cutting-edge scientific instruments, ensuring product quality and consistency.

**INDIANHERBS'** products have earned acclaim and trust from leading institutions globally, being exported to over 50 countries across Asia, Europe, Latin America, and Africa. Our commitment to quality and innovation is validated by certification from the Export Inspection Council of India, Ministry of Commerce and Industry, making us the first Herbal Company to achieve such recognition. Our R&D Centre, approved by the Ministry of Science and Technology, Govt. of India since 1986, boasts modern facilities for the standardization and quality control of herbal products.

The **INDIAN HERBS** booth attracted a significant audience, including feed millers, integrators, large farmers, consultants, nutritionists, and distributors, where our technical team expertly addressed inquiries. Upholding our vision of sustainability and global well-being, **INDIAN HERBS** is dedicated to supporting the animal healthcare industry and esteemed customers. We are committed to delivering antibiotic-free, residue and resistance-free, environmentally friendly, and cost-effective phyto-genic solutions, ensuring feed-to-food safety. We extend our gratitude to customers, patrons, scientists, and well-wishers for their steadfast support, cooperation, and guidance, and eagerly anticipate exploring new business horizons with their continued invaluable cooperation in the future.



# NOVUS Names new Director for South Central Asia



producers as they work to improve gut health and immune system function and implement antibiotic-free production.

"Through an integrated approach combining technical know-how with gut health products like AVIMATRIX® Feed Solution and NEXT ENHANCE® Feed Solution, we are helping create effective ABF production," he says.

Dr. Singh says following the initial success of the NOVUS dairy team in India, the company has invested more resources, allowing further expansion in this market. The goal is to reach more customers and bring innovative solutions backed by scientific research to the largest dairy market in the world.

"There are many challenges and opportunities in dairy production. NOVUS has decades' worth of research and commercial trials demonstrating how we can improve milk fat production and reproductive performance," he says. "On the challenge side, we have products that are shown to reduce somatic cell count and manage lameness to improve productivity and extend the herd's longevity. This is an important growth market for NOVUS and we have a lot to offer."

Dr. Singh came to NOVUS in 2019 to serve as the head of strategic marketing and technical services for South Central Asia before leading the marketing team for the Asia-Pacific region. He held roles at Cargill and Alltech before coming to NOVUS.

To speak with Dr. Singh or his team about how NOVUS is supporting customers in South Central Asia, visit the Contact Us page at [novusint.com](http://novusint.com).

*BENGALURU, INDIA (February 7, 2024)* – NOVUS recently named Dr. Manish Kumar Singh its new regional director for NOVUS in South Central Asia. In this role, Dr. Singh is responsible for developing and executing the Novus business strategy in the region.

"Asia represents a huge opportunity for growth for NOVUS," says Vaibhav Nagpal, DVM, NOVUS vice president and managing director for Asia. "Manish has extensive expertise about the market and the customers throughout South Central Asia. He also has the confidence of his colleagues to make sound, strategic decisions that will help grow the business in the region. With 15 years of experience working in South Asia and Asia-Pacific regions in various roles, I am sure he will strengthen the NOVUS team and grow the business."

#### **Dr. Singh says his top priority in the new role is his colleagues.**

"I aim to build a culture of trust by fully engaging my colleagues," he says.

"Agriculture is a business about animals and plants, but the foundation is people. It takes many people in many roles working together to produce high-quality, safe, nutritious food. By fostering a collaborative working environment across all my teams, we will be more successful as a trusted partner for all our customers and stakeholders."

Speaking about the poultry and dairy customers in South Central Asia, Dr. Singh says there are many opportunities for intelligent nutrition from NOVUS to positively impact animal performance and help producers achieve their goals.

"Feed cost is a top concern for producers worldwide. We can help optimize feed costs and affect the impact of anti-nutritional factors through our knowledge about feedstuffs along with our CIBENZA® Enzyme Feed Additive," he says. "Meat consumption and processing is on the rise; we have solutions for those concerned about meat quality, growth efficiency and structural health. Our team also has global expertise in maternal health that, partnered with the use of MINTREX® Bis-Chelated Trace Minerals, can help optimize the reproductive performance."

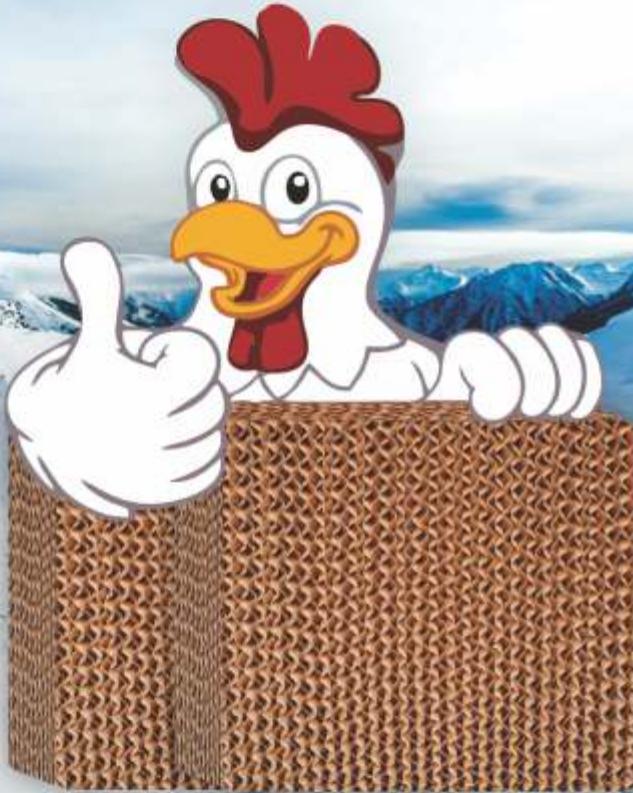
As an international company, Dr. Singh said NOVUS has a dedicated team of in-house technical experts and renowned third-party consultants to support



Cooling Pad Guard: Cleaner & Descaler

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# Glamac Honored with 'Veterinary Pharma Innovation of the Year' Accolade by The Economic Times



Mumbai, 20 January 2024 - Glamac International Pvt Ltd, a leading veterinary pharmaceutical company, specialised in Poultry Nutrition and Feed Additives, has been awarded the prestigious "Veterinary Pharma Innovation of the Year" award by "The Economic Times" for its innovative product, Cynka HBR. The award ceremony was held at Courtyard by Marriott, Mumbai. It was attended by the Glamac team, including Meghana Mukherjee Salvi, Director of Glamac; Dr. Sumon Nag Chowdhury, Group Technical Manager; SujitJadhav, Sr. Manager – Finance & Operations; and Dr. Rahul Mogale, Product Manager. CYNKA HBR - an innovation from the R&D platform of Glamac- unique specialized preparation with strong antimicrobial action protects the flock against the development of digestive tract disorders and maintains the overall performance. In the announcement, Meghana Mukherjee Salvi said, "We are thrilled to receive this prestigious award, and we are grateful to The Economic Times for

recognizing us for our innovation. Cynka HBR is a breakthrough innovation which is born through series of research and technical trials. It envisaged our vision of developing a non-antibiotic preventive feed additive that ensures effective gut health management in poultry." The award is particularly relevant to the poultry industry. In chicken rearing, digestive disorder with microbial challenge is a perpetual and financially crippling problem. Entire poultry fraternity is desperately looking for a smart solution against E.coli, salmonella, digestive disorder and loose dropping. CYNKA HBR is an innovative formulation for diarrhoea, microbial control and gut health modulation in chicken that can outrightly replace conventional antibiotics (AGP) & age old Halquinol in feed with much better efficacy & ROI. On a larger prospective and long-term vision, it can support the drive of antibiotic free chicken & eggs in India. Mr. Abir Mukherjee, Managing Director of Glamac, said, "This award is a

testament to our commitment to innovation and excellence. We are proud to be recognized and we strive to be technically driven to bring cutting-edge formulation to the ecosystem supported by our strong technical expertise headed by Dr. Sumon Nag Chowdhury and dedicated team. We expect Cynka HBR to be a game changer particularly eyeing the antibiotic free eggs & chicken segment of India and global market in the days to come and as the successful alternative of Halquinol& conventional Antibiotics (AGP) for effective anti-diarrhoeal and antimicrobial solution."

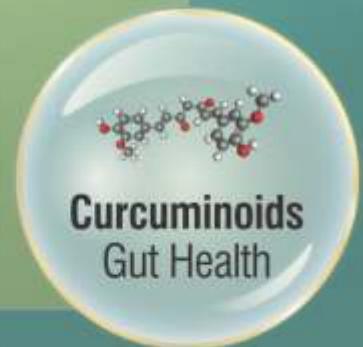
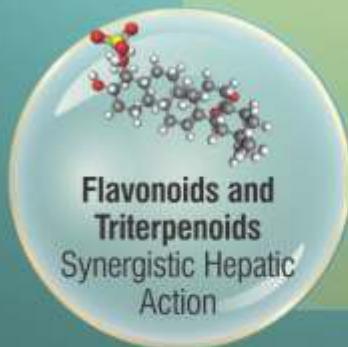
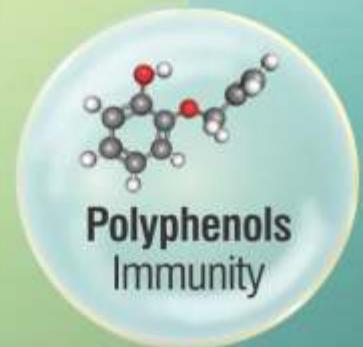
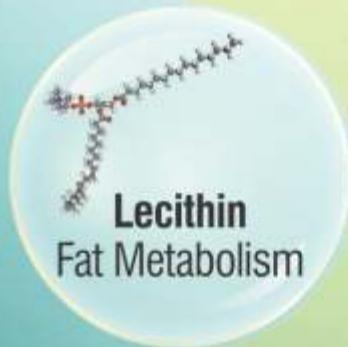


# Fatty liver

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# Carus Laboratories Hosts Successful Product Information Session at GADVASU, Extends Scholarships to Meritorious Students



Carus Laboratories, a distinguished name in the veterinary pharmaceutical industry, proudly announces the successful execution of a product information session at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), one of India's premier institutions in veterinary and animal sciences.

The event showcased Carus's innovative and high-quality solutions for animal health and

nutrition, receiving commendable feedback from both faculty and students in attendance. As part of its corporate social responsibility (CSR) initiatives, Carus Laboratories participated in the oath ceremony for BVSc and AH students, offering scholarships of INR 51,000, INR 31,000, and INR 21,000 to the top three meritorious students.

We extend our heartfelt congratulations to the

accomplished students and wish them continued success in their future endeavors," said Dr. Deepak Kumar Dhiman, General Manager at Carus Laboratories. "This initiative aligns with our commitment to fostering education and supporting promising individuals in the field of veterinary sciences."

The scholarships were presented during the ceremony, underscoring Carus's dedication to recognizing and encouraging excellence in veterinary education. Dr. Deepak Kumar Dhiman, General Manager of the Nutrition Division, and Dr. Rajan Sharma, Product Manager of the Injectable Division, represented Carus Laboratories at the event, contributing significantly to its success.

Carus Laboratories looks forward to fostering more collaborations and partnerships with GADVASU and other esteemed institutions in the realm of animal health and welfare.



# Aviagen Director of Global Marketing & Corporate Communications Marla Robinson accepts 70-year exhibitor award from USPOULTRY Chairman Mikell Fries.



The International Production and Processing Exhibition (IPPE) 2024 represented a special occasion for global poultry breeding company Aviagen®, which celebrated 70 years of participation in the show this year. Held Jan. 30-Feb. 1, IPPE 2024 was characterized by customer collaboration, knowledge exchange among industry experts, and the recognition of outstanding young talent.

## Celebrating 70 years at IPPE

Aviagen proudly celebrated seven decades of engagement with IPPE audiences. As the world's largest annual poultry, feed and meat technology exposition, IPPE continues to be a regular event on the Aviagen calendar, presenting valuable opportunities to connect with poultry producers and members of the value chain from across the globe. Aviagen received recognition for this noteworthy milestone at a reception hosted by show organizer U.S. Poultry & Egg Association (USPOULTRY). Director of Global Marketing and Corporate Communications Marla Robinson accepted the award from USPOULTRY Chairman of the Board of Directors Mikell Fries on behalf of Aviagen.

Aviagen's 2024 Young Leaders Under 30 from left: Rachel Breeding, Elizabeth Mixon, BrenleyBostic and Tyler Wilson.

## Recognizing Young Leaders Under 30

Aviagen is thrilled to announce that four of its talented employees received the prestigious IPPE "Young Leaders

Under 30" award:

1. Rachel Breeding, Quality Assurance Manager, Aviagen
2. Elizabeth Mixon, Lead Auditor, Aviagen
3. Tyler Wilson, Poultry Vaccination Manager, Aviagen
4. BrenleyBostic, Logistics and Planning Manager, Aviagen Turkeys

These promising young leaders, aged 21 to 29, were selected based on their exceptional leadership abilities and demonstrated commitment to the industry. They were honored at a special breakfast event during IPPE, where they were presented with distinctive "Young leaders" plaques.

Aviagen North America President Marc de Beer emphasized the importance of nurturing the industry's next generation, commenting, "The sustainability of our industry depends on their ingenuity and innovative spirit. Aviagen and USPOULTRY share a commitment to encouraging bright young talent with a passion for poultry and feeding the world. We're immensely proud of our four exceptional leaders who were honored at IPPE and wish them a fulfilling career of making outstanding contributions to our industry and our world."

## Connecting with the future

Aviagen, committed to fostering connections with the next generation, organized a student breakfast that drew over 100 students from various universities. Furthermore, at the student career section of IPPE, Human Resources representatives were on hand to interact with students and conduct interviews for potential careers at Aviagen. Both initiatives attracted a high turnout of students

enthusiastic about contributing to a sustainable, healthy source of protein to feed the world.

## Sharing expertise: An IPPE hallmark

IPPE provides numerous opportunities to connect with global peers, contributing to the sustainability of the industry through collaboration, connection and the exchange of invaluable knowledge.

IPPE TechTalk represented one such opportunity, and Aviagen's Global Head of Technical Systems was there to underscore the importance of data capture and analysis to continuous improvement in bird welfare and sustainability during his presentation on "From raw data to rich insights: Mastering data management in poultry."

Similarly, at the American Feed Industry Association (AFIA) meeting, Anne-Marie Neeteson, Global Senior Advisor for Welfare, Sustainability & Compliance, shared insights on how the industry can contribute to environmental sustainability in her talk on "You can't change what you don't measure: company-specific look at Life Cycle Analysis (LCA) and target areas for change."

Aviagen CEO Jan Henriksen expressed satisfaction with the level of engagement at this year's IPPE, saying, "Our show theme and corporate philosophy of 'breeding success together' was put into practice at IPPE. We were pleased to connect with our esteemed customers and industry stakeholders, sharing ideas and best practices. This level of collaboration is foundational to the success of the industry in providing a safe, secure, and nutritious source of affordable protein to communities worldwide, while continually enhancing animal welfare."



## **EW Nutrition Acquires BIOSTABIL Product Line from DSM-firmenich**

**VISBEK, 5 March 2024 – EW Nutrition, a global provider of animal nutrition solutions, announced today that it has acquired the BIOMIN BIOSTABIL product line from dsm-firmenich. The deal gives EW Nutrition ownership over an established and successful line of silage inoculants.**

"The agreement we have concluded gives us a solid foothold in a sector where we are currently developing a more substantial presence" says Jan Vanbrabant, CEO of EW Nutrition. "EW Nutrition continues to expand strategically, enriching its portfolio with market-leading solutions, developed in-house or through acquisitions. The BiominBiostabil line joins an innovative portfolio that has been growing tremendously in the last three years with the launch of Ventar D and Pretect D, our Feed Quality and Pigment lines acquired in 2021, and yet another momentous global launch coming up shortly." This solid, well-proven line of silage inoculants, says Vanbrabant, will be an important addition to customers of EW Nutrition's On-Farm Solutions business around the world.

The transaction was closed on March 1, 2024. Under the services agreement concluded, all customers will be actively supported over the next months, while the asset, brand, and go-to-market will be transitioned to EW Nutrition in the coming period.

The financial details of the sale remain confidential.

###

### **About EW Nutrition**

EW Nutrition is a global animal nutrition company that offers comprehensive, customer-focused solutions for gut health management, antibiotic reduction, feed quality, animal care, and more.

Website: [ew-nutrition.com](http://ew-nutrition.com)

Contact: [info@ew-nutrition.com](mailto:info@ew-nutrition.com)



# NOVUS Acquires Enzyme Company BioResource International, Inc.

*Acquisition will strengthen the company's portfolio and innovation goals*

CHESTERFIELD, MO (March 5, 2024) – Novus International, Inc. announces it has completed the acquisition of U.S.-based enzyme company BioResource International, Inc. Opens a new window (BRI). Under the terms of the agreement, NOVUS becomes the owner of all BRI's products and intellectual property and takes control of the company's facilities.

"This move will allow us to serve our customers better and expand our innovation pipeline further," says NOVUS President & CEO Dan Meagher. "Enzymes are vital tools for producers to ensure animal health and well-being and help deliver on-farm profitability. We're very excited to offer our customers more options as well as aspire to develop new feed additives."

The relationship between the two companies isn't new. NOVUS has partnered with BRI since 2008 to manufacture its protease product, CIBENZA® Enzyme Feed Additive. Meagher says having full ownership and control of the product line and the option to expand NOVUS' portfolio beyond protease enzymes is a natural fit in the company's long-term strategic plans.

"As a leader in intelligent nutrition,

NOVUS' priorities include investing further in functional proteins and the gut health segment, growing our portfolio, and achieving stronger control of our supply chain," he says. "Along with supporting these goals, acquiring BRI also increases our capabilities to develop innovative solutions in the fermentation space."

BRI's products include Versazyme® protease feed additive, Xylamax® xylanase feed enzyme, Dymanase® mannanase enzyme, Phytamax® granulated, thermostable, microbial 6-phytase enzyme; and EnzaPro® enzyme and direct-fed microbials, among others.

BRI's co-founder and CEO Giles Shih, Ph.D., says the acquisition and tapping into the knowledge of employees in both BRI and NOVUS allows for the continued growth of the company he helped create 25 years ago.

"We are super excited about the future where BRI's products and people combine forces with the global reach and deep industry knowledge NOVUS brings to the feed additive space," Shih says. "This deal is not one of happenstance. Our two companies have worked closely together since

2008 to launch the first generation of heat-stable protease feed enzymes and shape how they are developed, marketed, and optimized to add value to customers worldwide. This acquisition will enable NOVUS to innovate the next generation of proteases and enzymes that will do even more, from promoting gut health to promoting the bottom line."

Along with BRI's current product portfolio, NOVUS also takes over the company's facilities in North Carolina in the U.S.

For current BRI customers, Meagher said continuity is key. He said current customers should experience "business as usual" throughout the integration period.

NOVUS is the intelligent nutrition company providing solutions for the global animal agriculture industry. The company's portfolio includes bis-chelated organic trace minerals, enzymes, organic acids, essential oils, liquid and dry methionine, and a network of experts worldwide to provide guidance on management best practices. NOVUS is owned by Mitsui & Co., Ltd. and Nippon Soda Co., Ltd.

# 5<sup>th</sup> Biennial Poultry Health Conference and National Symposium on 'Poultry Health: Current Challenges and Future Strategies'

23rd-24th February 2024, Hyderabad

ICAR-Directorate of Poultry Research, Hyderabad, in collaboration with the Association of Avian Health Professionals, Hyderabad, organised the 5th Biennial Poultry Health Conference and National Symposium, on the theme 'Poultry Health: Current Challenges and Future Strategies', on

23rd-24th February 2024.

The Chief Guest, Dr. R.N Srinivasa Gowda, Former Vice-Chancellor, Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, and The Guest of Honour, Dr. M.S Oberoi, Former

Regional Advisor, FAO, chaired the inaugural session of the event.

Dr. J.M Kataria, President, AAHP, and Dr. R.N Chatterjee, Chairman, organizing Committee and Director, ICAR-DPR were also present during the programme.



Academics and researchers from various ICAR institutes, universities, and industries presented lead papers on various diseases. A scientist-industry interface meeting was held to discuss poultry health issues, with scientists, students, and veterinarians presenting oral, case reports, young scientist award presentations, and poster presentations.

The Chief Guest for the valedictory session, Dr V. Ravindar Reddy, Former Vice Chancellor, PVNRTVU, Hyderabad, and Guest of Honour, Dr. R.P Sharma, Former Director, ICAR DPR, awarded Best Oral Presentation, Best Poster Presentation, Young Scientist Awards, and Best Case-study to motivate young brains, to the participants.

The conference was attended by around 300 delegates from different parts of the country.



# ICAR-Indian Veterinary Research Institute: Annual Review Meeting of CRP on Vaccines and Diagnostics

ICAR-Indian Veterinary Research Institute, Bengaluru campus hosted the Annual Review Meeting of the Consortium Research Platform on Vaccines and Diagnostics for 2023 in Bengaluru on 4th-5th March 2024.

ICAR-IVRI, Bengaluru campus cum Project Coordinator, CRP on V&D presented an overview of the progress of the CRP on the V&D platform and mentioned that a total of 39 technologies have been generated.

Makeish, Coordinator (Fisheries sector) briefed the house about the progress made in their respective sectors.

Dr A. Sanyal, Director, ICAR-National Institute of High-Security Animal Diseases, Bhopal, Dr. B. R. Gulati, Director, ICAR-National Institute of Veterinary Epidemiology and Disease Informatics, Bengaluru, also participated in the review meeting and provided critical suggestions.

The forum reviewed 31 research projects and approved three new ones. Principal Investigators and Co-investigators from 14 ICAR research institutes participated and presented progress reports for 2023-24 and outlined targets for 2024-25. Two hands-on workshops were proposed, one on CRISPR-based diagnostics and another on Hybridoma technology, for scientists involved in CRP on V&D.



Dr. Raghavendra Bhatta, Deputy Director General (Animal Sciences) ICAR, emphasised the pivotal role of ICAR in managing the health of animals, fish, and crops. He stressed the importance of partnering with industry stakeholders to bring these technologies to market.

Dr. Ashok Kumar, Assistant Director General (Animal Health), highlighted the uniqueness of CRP on V&D with its intersectoral linkages. He urged scientists to undertake external validation of technologies using well-defined Standard Operating Procedures and recommended the inclusion of more poultry vaccines in the platform with expertise available at IVRI, Bengaluru campus.

Dr. Pallab Chaudhuri, Joint Director,

Dr. R. Selvarajan, Director, ICAR-National Research Centre for Banana, Tiruchirapalli & Coordinator (Agriculture sector), and Dr. M.



## NABARD Proposes Establishment of Processing Units to Transform Gujarat's Meat and Egg Industry

The National Bank for Agriculture and Rural Development (NABARD) has recommended the establishment of meat and egg



processing units in Gujarat to produce value-added products like chicken samosas, patties, and momos, as per the State Focus Paper for the financial year 2024-25. The paper noted that meat production in Gujarat has remained stagnant at 0.35 lakh kilograms for the past two years and suggested enhancing breeding infrastructure for goats and sheep, as well as promoting contract farming to boost the poultry sector in rural areas. Additionally, the paper highlighted a 3.6% decline in egg production in Gujarat in 2022-23, with the state producing 18,789 lakh eggs during that period.

NABARD also proposed the establishment of egg processing centers for ready-to-eat products and emphasized the need for developing the poultry sector at the grassroots level. The State Focus

Paper projected an 18% growth in credit potential for the priority sector in Gujarat for 2024-25, with a total allocation of ₹3.52 lakh crore. This includes ₹1.8 lakh crore for MSMEs, ₹1.42 lakh crore for agriculture and allied sectors, and the remaining amount for other priority sectors. The paper aims to increase the utilization and demand for meat products from other states by introducing value-added products that are popular in the market.

Overall, the focus is on enhancing

the meat and egg processing industry in Gujarat, addressing stagnation in production, and promoting growth through infrastructure development and credit support for various sectors, including MSMEs and agriculture. The State Focus Paper serves as a roadmap for boosting the rural economy and agricultural activities in Gujarat for the upcoming financial year.

## Ethanol vs. Feed: Poultry Sector Struggles Amidst Maize Competition, Advocates for GM Maize Imports

With ethanol producers fiercely competing for maize supplies, the poultry industry, which relies heavily on maize for feed, has asked the Union Government to allow it to import genetically modified maize and soyameal. It also urged the government to introduce high-yielding genetically modified seeds to boost the country's productivity.

Suresh Chitturi, Managing Director of Srinivasa Farms and Co-Chair of CII's National Committee on Animal Husbandry and Dairy, cited wheat and paddy as examples of crops whose productivity increased multifold following the Green Revolution, which saw the introduction of high-yielding varieties, and said a similar intervention was needed to increase maize yields and productivity. Addressing a session on the challenges and opportunities for the poultry industry at the CII's three-day AgriTech South 2024 on Friday, he stated that the country has enormous poultry potential.

The government should consider



importing GM maize to the extent required for ethanol production. We can also take steps to increase maize production to, say, 40 million tonnes from its current level of 30 million tonnes. This will increase the availability of maize for feed in the poultry industry, according to K G Anand, General Manager of Venkateshwara Hatcheries.

In 2023-24, the country expects to produce 0.8 million tonnes (mt) of ethanol from maize. This is expected to increase to 3.4 million tonnes in 2024-25 and 10 million tonnes in 2027-28. The poultry industry's demand for maize, which is currently 16 million tonnes per year, is expected to increase by one million tonnes per year.

The government's policy of using maize and broken rice to produce ethanol would result in a further shortage of cereals and maize. It poses a challenge to the industry's growth in the coming years. Allowing GM maize and soya meal imports is one solution.

The poultry industry's efficiencies improved significantly, with resource utilisation reduced by 70%. Input costs in India remain higher when compared to our global competitors, such as Brazil and Argentina. Furthermore, it faces the challenge of high volatility. Because of increased awareness about immunity and the importance of protein intake, per capita egg consumption has risen to 101 eggs. It is expected to increase to 180 eggs over the next 6-7 years.

## **Godrej Yummiez Launches Convenient Crispy Chicken Range to Satisfy Home**

## **Cravings**



Godrej Yummiez, a frozen ready-to-cook brand from Godrej Tyson Foods Limited, has introduced two new products in the non-veg segment - Yummiez Crispy Fried Chicken and Yummiez Crispy Chicken Bites. The company aims to cater to the increasing demand for convenient and value-added chicken products, acknowledging the trend of consuming fried chicken outside the home.

The products are designed for easy and quick preparation at home, taking only five to seven minutes to cook. The Crispy Fried Chicken is available in a 425g bucket pack for Rs 390, while the Crispy Chicken Bites come in a 360g bucket pack for Rs 360, and can be purchased through various retail channels and e-commerce platforms.

Godrej Yummiez is also planning to expand its product range in the sachet format, with the recent launch of a pack of two chicken sausages priced at Rs 30 receiving positive feedback in India. The company has already introduced chicken sausage sachets, cocktail sausages, and prawns in the past year to diversify its non-veg portfolio.

The CEO of Godrej Tyson Foods Limited highlighted the brand's focus on meeting consumer preferences for convenient and

tasty fried chicken options that can be enjoyed at home without the hassle of complex preparation. The company aims to continue innovating and introducing new products to cater to the evolving needs of consumers in the ready-to-cook frozen products category.

## **Nellore District on High Alert: Department of Animal Husbandry Implements Bird Flu Containment Measures**

The Department of Animal Husbandry has issued a cautionary warning to poultry farmers in the Nellore district following an outbreak of bird flu. Rapid response teams have started inspecting 38 poultry and two layer chicken farms to prevent the spread of the virus, particularly through migratory birds. The Visakhapatnam District Animal Husbandry Department Joint Director, D. Ramakrishna, stated that there are about 40 poultry farms in the district with a population of six to eight lakh birds. The department has alerted all farmers about the confirmed bird flu virus in Nellore district.

Measures to be taken by farmers include disinfection of poultry farms, restricting travel of farm workers and staff to other places, not allowing feed from other areas, frequent checks on bird condition, and temporary suspension of procurement of essential materials required for the farms until further orders from the government. A veterinary doctor advised people in close contact with flu-affected birds to contact the nearest health center

if they experience symptoms such as fever, cough, or sore throat.

In Nellore district, bird flu was confirmed after several chickens died in two villages earlier this month. Chicken shops close to affected farms were ordered to be closed for three months following the death of the fowls.

## **Delhi Welcomes Popeyes: Louisiana's Famous Fried Chicken Lands in ChandniChowk**



Jubilant FoodWorks Limited (JFL), India's largest foodservice company, has opened Popeyes, the famous Louisiana Chicken in ChandniChowk, marking its debut in the national capital region. Popeyes is known for its bold, Louisiana-styled fried chicken and world's most famous Chicken Sandwich, which gained popularity in the USA in August 2019. The restaurant will offer a variety of dishes, including the Chicken Sandwich, Hot & Messy Range, Cajun-flavored Chicken Tenders, Popcorn Chicken, Rice Bowls, Wraps, and vegetarian options like Cajun Veg Burgers, Veg Wraps,

Cajun Fries, and Onion Rings.

Sameer Khetarpal, CEO and MD of JFL, expressed his excitement at introducing Popeyes to the Capital Region and aiming to recreate the same fan following in Delhi that it has received in other cities. Gaurav Pande, Executive Vice President & Business Head of Popeyes, India, echoed this enthusiasm, stating that Popeyes stands out for its authentic Cajun flavor and a rich legacy dating back to 1972.

The launch of Popeyes is not just an expansion but also a significant milestone in the brand's global journey, blending the rich culinary

heritage of Louisiana with the timeless charm of Delhi. The brand plans to inaugurate additional stores in strategic locations, including Pacific Mall, Jasola, Pacific Mall Faridabad, and DLF Epitome, Gurgaon, while championing sustainability with a zero-emission delivery fleet.

As Popeyes weaves into the fabric of Delhi, it invites the city to indulge in a culinary adventure that promises to be as dynamic and spirited as the streets of ChandniChowk itself. This is more than just a launch; it is a celebration of flavors, culture, and community, heralding a new chapter in Delhi's

gastronomic saga.

Jubilant FoodWorks Limited is part of the Jubilant Bhartia Group and holds exclusive master franchise rights from Domino's Pizza Inc. to develop and operate the Domino's Pizza brand in India, Sri Lanka, Bangladesh, and Nepal. The company currently operates 32 Popeyes restaurants in 10 cities and 25 Dunkin' restaurants across eight cities.

## **India's Poultry Exports Soar to New Heights: Record-breaking Figures in FY 2023-24**



India's poultry exports, including eggs and egg products, have reached a new record of ₹1,200 crore to ₹1,400 crore in the current financial year 2023-24 due to strong demand from countries like Oman and Sri Lanka. The exports reached a high of ₹1,081 crore (\$134.04 million) during 2022-23, doubling over the previous year's ₹529.8 crore (\$71 million). In the first nine months of the current fiscal, the poultry exports stood at ₹1,074 crore (\$134.02 million).

Exports of eggs to Sri Lanka have seen a 100-fold increase in value terms, with the neighbouring nation emerging as the second

largest buyer of Indian poultry products. Exports to Oman, the largest buyer of Indian poultry products, stood at ₹293.90 crore in the current fiscal till December, compared to ₹277 crore in 2022-23. Other countries that saw an increase in poultry shipments till end-December include Japan at ₹82.91 crore (₹57.77 crore in 2022-23) and Qatar at ₹63.38 crore (₹51.60 crore).

Valsan Parameswaran, Secretary of the All India Poultry Exporters Association, said robust demand from countries such as Sri Lanka and Oman is driving the exports. He stressed the need for creating additional infrastructure, such as a dedicated quality laboratory in the main producing region of Namakkal in Tamil Nadu.

Mahesh P S, Joint Commissioner and Director of the Centre of Excellence for Animal Husbandary, Bengaluru, said that the poultry exports will increase both in chicken meat and eggs. The focus on quality poultry products at competitive prices will increase the pie.

## Amrita School Students Develop Egg Amino Acid to Boost Crop Yield

Final-year Amrita School of Agricultural Sciences students participating in the Rural Agricultural Work Experience Programme in Vadasithur introduced farmers to Egg Amino Acid, a cost-effective organic blend with numerous agricultural applications. This solution has shown promising results in improving flower production, preventing premature flower drop, and increasing fruit yield, which



benefits both vegetables and budded or grafted fruit tree seedlings.

The procedure entails placing eggs in a plastic jar with lemon juice and sealing it for 15 days before adding jaggery for another 15 days. The resulting egg amino acid can be filtered and stored at a recommended dilution for use on plants.

Students effectively communicated the method and application instructions to the farmers under the supervision of College Dean Dr. Sudheesh Manalil and with the assistance of facilitators Dr. Priya R, Dr. S Parthasarathy, and Dr. VR Mageshen.

## Maharashtra Animal and Fisheries Sciences University Proposes India's First Wildlife One Health Centre

The Maharashtra Animal and Fisheries Sciences University (MAFSU) in Nagpur has proposed a Wildlife One Health Centre to the state government. It will be an expansion of the current Wildlife

Research and Training Centre (WRTC) in Gorewada.

Dr. Shirish Upadhye, director of instruction and dean (veterinary), MAFSU, stated that if the government approves the ₹30 crore project, it will become the country's only institution dedicated to Wildlife One Health. The one health concept is about the relationship between human and animal health. Currently, the majority of One Health institutes and research centres concentrate on domestic animals. Dr. Upadhye stated that our proposed Wildlife One Health Centre will deal with wild animals and diseases brought on by their interference with human habitat.

He emphasised that increased human-animal conflict must have resulted in numerous new health complications for wild animals. The centre will conduct research on both human and wildlife health.



MAFSU has submitted information on the equipment needed, temporary staffing for five years, and other requirements. The centre will be housed in Gorewada's infrastructure, and after five years, it will be managed by the available staff at WRTC Gorewada.

MAFSU's vice-chancellor, Dr. Niteen Patil, stated that the university is working on several important projects. They were also the first veterinary university to adopt the New Education Policy (NEP) and a credit-based system at the postgraduate level.

Dr. Anil Bhikane, Director of Extension, stated that construction of the ICMR-sponsored One Health lab is currently underway. Following Prime Minister Narendra Modi's formal bhumi-pujan last year, a BSL-4 level lab is being constructed here. Underground construction is moving quickly. The construction will be completed within the timeframe specified.

## **Guru Angad Dev Veterinary University Organizes 21-Day Winter School on One Health**



The Centre for One Health at Guru Angad Dev Veterinary and Animal Sciences University has launched a 21-day winter school programme

on Applied Concepts in One Health, sponsored by the Indian Council for Agricultural Research (ICAR), to address zoonoses, antimicrobial resistance, and food security.

JPS Gill, the university's director of research, welcomed the participants, as did the guests: Inderjeet Singh, vice-chancellor; Sindura Ganapathy, fellow principal scientific advisor, government of India; and Sandeep Puri, principal of Dayanand Medical College & Hospital in Ludhiana.

Gill began the event by providing a comprehensive overview of the Centre for One Health's activities, emphasising its importance in addressing complex issues of human, animal, and environmental health. A total of 25 scientists from various organisations across India have enthusiastically participated in this training programme, eager to learn about the multifaceted aspects of the One Health approach.

Inderjeet Singh emphasised the evolving role of "One Health" in addressing new public health challenges. The V-C and other dignitaries made available the training compendium, the Centre for One Health's activity handbook, and a pocket guide to foot-and-mouth disease in cattle, demonstrating their commitment

to providing participants with comprehensive resources. Ganapathy emphasised the

importance of collaboration and teamwork in combating food safety, zoonotic diseases, and antimicrobial resistance. He emphasised the critical role of coordinating efforts across national, state, and local health agencies to improve human and animal health through the "One Health" strategy. Puri emphasised the enormous challenge posed by antibiotic resistance and advocated for community awareness campaigns to mitigate its effects. He emphasised the importance of improving collaborations between human and animal health professionals in combating endemic and emerging zoonoses.

JS Bedi, director of the Centre for One Health, thanked all of the dignitaries, participants, faculty, and university officers who came to the event. The event concluded on a positive note, with participants eager to use their newly acquired knowledge and skills to meaningfully promote holistic health and well-being in society.

## **WOAH Marks 100th Anniversary: A Century of Global Commitment to Animal Health**

The World Organisation for Animal Health (WOAH), founded as the Office International des Epizooties (OIE), celebrated its 100th anniversary on January 25, demonstrating the organization's global commitment to animal health and welfare. WOAH began in the early 1920s as a multinational effort to combat rinderpest, a contagious viral disease that affects cloven-hoofed animals. The disease decimated animal populations, particularly cattle and buffalo, and



severely disrupted economies in Africa, Europe, and Asia.

WOAH's missions include ensuring transparency in the global animal disease situation, safeguarding global trade by publishing health standards for international trade of animals and animal products, and encouraging international solidarity in animal disease control, particularly by improving national veterinary services' legal frameworks and resources. The organisation, headquartered in Paris, has since expanded to 183 member countries and will undergo a comprehensive rebranding campaign in May 2022.

In the early 1900s, the international trade in live animals and their products expanded significantly. Rinderpest first appeared in Belgium in 1920, following the shipment of infected zebu cattle

from India to Brazil via Antwerp. As a result, countries gained a better understanding of the need to combat animal diseases globally. At the International Conference on Epizootic Diseases of Domestic Animals in May 1921, representatives from 43 countries urged the formation of an international organisation to coordinate responses to infectious animal diseases.

On January 25, 1924, 28 countries signed an international agreement to establish the Office International des Epizooties. By 1927, 24 countries had ratified the agreement, and the new organization's first General Session took place later that year. A year later, the organization's first conference was held in Geneva, Switzerland, where a committee of eight experts drafted a document

that laid the groundwork for international sanitary policy.

In the 1950s and 1960s, WOAH strengthened its position as a reference organisation by collaborating with organisations such as the International Federation for Animal Health (IFAH) and reaching agreements with the Food and Agriculture Organisation of the United Nations (FAO) and the World Health Organisation (WHO). The World Trade Organisation (WTO) was established in 1994 through the signing of an international treaty that included the Agreement on the Application of Sanitary and Phytosanitary Measures.

The organization's authority is based on the WOAH Terrestrial and Aquatic Animal Health Codes, while its manuals provide a standardised approach to disease diagnosis. Today, WOAH must address additional threats, such as avian influenza, African swine fever, antimicrobial resistance, and the sustainability of animal production. To address these concerns, WOAH monitors the prevalence of reportable diseases and collects and analyses the most recent scientific data on animal disease detection and control.

## **Cargill Unveils REVEAL™ Layers Technology: Revolutionizing Poultry Nutrition Management**

Cargill has introduced the REVEAL™ Layers technology, utilizing Near InfraRed (NIR) technology to assess body composition in poultry layer hens. This innovation allows producers and nutritionists to make





real-time decisions on diet adjustments to optimize hen performance and egg production.

Overdeveloped fat pads in hens can impact long-term egg production and liver function, making it crucial to monitor and manage body composition effectively. By analyzing fat pad measurements and providing actionable data, REVEAL™ Layers helps in tailoring diets for optimal layer body composition, potentially reducing feed costs, increasing egg production, and enhancing profitability.

The technology was showcased at the 2024 International Production and Processing Expo (IPPE) by Cargill, a company dedicated to providing food, agricultural solutions, and industrial products sustainably. Cargill emphasizes a holistic approach to monitoring body fat and egg production, aiming to support producers and nutritionists in making informed decisions about poultry diets.

This initiative aligns with Cargill's commitment to innovation, sustainability, and responsible practices in the food industry. With a focus on nourishing the world safely and efficiently, Cargill collaborates with farmers and customers to deliver essential products while prioritizing people, integrity, and long-term sustainability.

## Study suggests Selenium and Zinc-Enriched Eggs can Combat Oxidative Stress and Inflammation

A study published in *Nutrients* investigated the effect of a diet of selenium- and/or zinc-enriched eggs (SZE) on oxidative stress, cognitive impairment, and intestinal flora in D-galactose-induced aging mice. The researchers found that the SZE diet could reduce organ damage and improve cognitive function in mice models by modulating oxidative stress, inflammation, and gut microbiota.

The aging process involves an irreversible structural and functional decline influenced by genetics and the environment. Essential trace elements selenium (Se) and zinc (Zn) have shown anti-aging effects linked to their roles in reducing reactive oxygen species (ROS) and combating oxidative stress. However, their combined effects of Se and Zn remain underexplored.

Eggs, known for their high nutritional value, contain essential

nutrients like proteins, fatty acids, vitamins, and trace minerals, contributing significantly to human diet and health. SZE represents an innovative approach to enhance mineral potency, with potential health benefits attributed to active substances like ovalbumin, ovoglobulin, and phosphatide. However, our understanding of SZE's nutritional functions and biological activities is currently limited.

Egg powders were developed from SZE and normal eggs (NE), and their composition was analyzed. In vivo analysis, 70 male Kunming mice were randomized into seven groups: the control group (Con), the model group (Mod), the low-dose SZE group (SZLE), the high-dose SZE group (SZHE), the ordinary eggs group (OE), the DL-Selenomethionine group (SeM), and the ZnSO<sub>4</sub> group (ZnSO<sub>4</sub>). All groups except Con were injected with D-galactose to induce aging.

After an 8-week intervention, behavioral analysis, fasting, and euthanasia were conducted on the mice. Blood samples were collected and analyzed for levels of total superoxide dismutase (SOD), malondialdehyde (MDA), alanine transaminase (ALT), aspartate amino transferase (AST), and glutathione peroxidase (GSH-Px).



Total cholesterol and other heavy metals were found to be lower in SZE than NE.

In the in vivo analysis, the researchers found that SZE improved brain dysfunction induced by D-galactose, lower D-galactose-induced hepatic impairment and inflammation, and maintained the balance of intestinal flora by increasing the ratio of Firmicutes and Bacteroidota. Further research exploring the therapeutic application of SZE diet in humans is warranted.

## **Poultry Industry in Russia Set to Implement Compartmentalisation System for Enhanced Biosecurity**

Russian authorities have announced a draft decree implementing a compartmentalisation system for poultry farms, similar to the pig industry. The system will divide farms into four categories based on their biological protection level. Compartments 1 and 2 are assigned to farms with low or poor biological protection, while compartment 3 is for farms with standard protection. Most Russian industrial pig farms have compartment 4, indicating compliance with strict veterinary rules. This system allows pig farms affected by ASF to continue selling products outside the region, even overseas.

The highest compartment poultry farms will be eligible to continue exports even in quarantine zones, provided bird flu is not registered



at the facility. The Russian Agricultural Ministry claims the system will secure trade advantages for the poultry industry, simplify export procedures, improve the epizootiological situation, and ensure veterinary safety of poultry products.

The draft regulation also outlines how owners can apply for inspections of poultry production facilities to determine their animal health status. Russian poultry farms have requested the system from Russian veterinary watchdog Rosselkhoznadzor, which criticizes Western poultry farms' lack of compartmentalisation and the green path approach.

## **EU Proposes Extension of Import Restrictions on Ukrainian Agricultural Products amid Farmer Unrest**

The European Commission has proposed measures to limit agricultural imports from Ukraine, including poultry, eggs, and sugar, to appease protesting farmers in France and other EU members. The Commission plans to renew the

suspension of import duties and quotas on exports from Ukraine and Moldova to the EU for another year, while reinforcing protection for sensitive EU agricultural products. These Autonomous Trade Measures (ATMs) have been in place since June 2022 to shore up Ukraine's economy following Russian incursions that have affected shipments taking the Black Sea route.

The proposal strikes the right balance between maintaining economic support for both countries and taking EU farmers' interests and sensitivities fully into account. It will help keep Ukraine's and Moldova's economies going while also having stronger safeguards to prevent market disruptions in the EU. For sensitive products like poultry, eggs, and sugar, an "emergency brake" is foreseen, stabilizing imports at the average import volumes in 2022 and 2023. If imports exceed these volumes, tariffs would be reimposed to ensure import volumes do not significantly exceed those of previous years.

The Commission's proposals come as protests by farmers and truckers intensify in Bulgaria, Hungary, Poland, Romania, and Slovakia, who have complained that farm imports have distorted their markets. In France, protests have been

particularly fierce with French farmers blocking major highways to Paris over imports from Ukraine and an ongoing trade deal between the EU and South American bloc Mercosur, which farmers say would introduce unfair competition in sugar, grain, and meat.

## **Innovative Feed Additive NeutraPath Earns Amlan International Top Recognition at IPPE**



Amlan International, a global leader in mineral-based feed additives for poultry and livestock, has been awarded the "Best of the Best" award in Live Production at the International Production & Processing Expo (IPPE). The award is given to NeutraPath, a natural antimicrobial feed additive that reduces pathogenic bacterial load and colonization, improves performance of pathogen-challenged poultry and livestock, and reduces mortality. NeutraPath's research-backed, natural solution optimizes intestinal health, improving absorption of nutrients and overall performance in high-challenge environments.

The company's commitment to innovation and sustainability in the poultry industry is reflected in its multifaceted approach to disease



prevention and control. Its efficacy has been demonstrated in numerous studies, showcasing its potential to deliver significant improvements in intestinal health, pathogen control, and feed conversion.

Amlan was among three distinguished exhibitors selected for the IPPE New Product Showcase, reflecting its commitment to advancing industry standards through innovation. The company's dedication to excellence and sustainability has positioned NeutraPath as a game-changer in poultry production.

Previously, Phylox, a natural, non-pharmaceutical coccidiosis solution that optimizes gut health, also earned the "Best of the Best" award in Live Production at the 2023 IPPE. Both products contain a synergistic blend of bioactive phytochemicals that work together to damage Eimeria cell structure and function while strengthening intestinal integrity and boosting immunity.

## **GOOD Meat's Cultivated Chicken Production Temporarily Halted**

### **in Singapore**

Eat Just, the US company that owns the cultivated meat division of GOOD Meat, has temporarily halted production of cultivated chicken in Singapore. The company's primary facility and a new \$61 million plant in Bedok have been closed as it reconsiders its strategy in Asia. Eat Just also canceled the construction of a JUST Egg production plant in an industrial state in Singapore. Uber's Bistro, which started offering GOOD Meat chicken in 2023, is currently not carrying it anymore.

Good Meat chicken was sold in limited quantities at the 1880 club and later at hawker stalls. The Bedok facility is expected to open sometime in 2024, with Eat Just intending to double its previous production during 2024 and produce more in Singapore this year than in any previous year.

Good Meat's cultivated chicken is currently unavailable in the US. After receiving approval in June, the cell-cultured chicken was launched at China Chilcano, a Washington DC restaurant owned by chef José Andrés. Reservations are currently paused until further notice.

Eat Just has raised over \$850 million, including \$270 million for

GOOD Meat. In September, the company secured funds (\$16 million) in a round led by VegInvest and Ahimsa Foundation to propel profitability and upgrade its products, including cultivated chicken. The company faces a \$100 million lawsuit from bioreactor manufacturer ABEC over unpaid bills.

## Float Foods Receives FSSC 22000 License for Plant-Based Egg Yolk Facility



Singapore-based food technology company Float Foods has received the FSSC 22000 (Food Safety System Certification) License for its proprietary plant-based Raw Egg Yolk and White facility to manufacture plant-based egg yolks. This facility offers a sustainable and scalable solution for producing egg whites and yolks, potentially freeing manufacturers from costly supply chain intervention and animal and resource issues. The OnlyEg Raw Yolk machine uses a process to create plant-based egg yolks, resulting in a finished product presented in capsules, which can be sold frozen for longer shelf life. The current Yolk line has a production capacity of almost 2000 egg yolks

per day shift.

Float Foods is working with several food manufacturers to bring its plant-based egg ingredients to market, confident that its technology will have a major impact on the food industry. Key benefits of the Float Foods machine include producing plant-based egg whites and yolk products that would require hen eggs, enabling food manufacturers to meet the growing demand for sustainable and ethical food options, being more cost-effective and resource-efficient than traditional egg production methods, and producing nutrient-rich food free from cholesterol.

The plant's international FSSC certification and Halal certification leverage the global Halal market, estimated at over \$2 trillion. The global vegan egg market experienced a year-on-year expansion of 6.9% in 2021, reaching a value of \$1.5 billion, and is expected to reach sales of \$3.3 billion by 2031 at a CAGR of 8.3%.

Float Foods' innovation simplifies control and production quality, allowing manufacturers to evaluate and substitute raw materials for their properties and pricing. Asians face limited access to nutritious food and are at higher risk for diet-related illnesses, such as high blood pressure and heart disease. By 2050, dietary changes could free up several million square kilometers of land and reduce global carbon dioxide emissions by up to eight billion tonnes per year.

Float Foods Pte Ltd, founded by Vinita Choolani, aims to create a more sustainable and equitable food system by developing innovation in food technology. The company has designed and built a scalable manufacturing process to produce plant-based yolks and whites at scale, and its ready-to-eat OnlyEgTM

products have already been adopted among top hotels and cafes in Singapore.

## Kazakhstan Eyes Poultry Export Opportunities as China Lifts Import Ban



Chinese authorities have lifted a ban on poultry imports from Kazakhstan, following bird flu outbreaks in 2005. This move is expected to boost Kazakh poultry production in the long run, but in the short term, the country is prepared for a possible domestic market shortage due to turbulence in neighboring Russia. Kazakhstan has already entered into negotiations with China about veterinary requirements farmers must comply with to begin exporting poultry products. KairatMaishev, president of the Kazakh union of egg manufacturers, believes China is promising for Kazakh businesses, but cautions against being too optimistic about export prospects.

In the short term, Kazakh customers must prepare for a temporary shortage of poultry products, as the country imports 13% of poultry from Russia, where the broiler meat and eggs market has been turbulent. Russian authorities have

previously banned the transit of US poultry through its territory due to bird flu fears, which could impact the Kazakh market, where US broiler meat meets a substantial share of the demand. Kazakh poultry producers have urged the authorities to restrict imports to allow them to scale up operations.

## South Korea's EASY BIO Acquires Devenish Nutrition to Strengthen Presence in North America



South Korea-based EASY BIO has acquired a 100% stake in Devenish Nutrition LLC, a feed additives company based in the United States, in order to expand its feed additive and premix business in North America. EASY BIO USA, the former's U.S. subsidiary, made the acquisition from its parent company, Devenish Holdings Ltd. Devenish Nutrition has been operating businesses such as feed additives and premixes since its inception in 1998. The company operates five manufacturing plants and six research facilities in the United States and Mexico. Over 30 of its 200-plus employees hold Ph.D. degrees, which has helped the company establish a strong position in the North American livestock market by offering value-added products and services based on cutting-edge technology and research capabilities.

EASY BIO has pioneered technology in alternative antibiotic solutions, cost-saving solutions, and animal gut health solutions under the banner of "guidance for sustainable animal industry." It has experienced rapid growth, primarily through its UK subsidiary Pathway Intermediates Ltd., in global markets such as the United States, Canada, Spain, China, Vietnam, and Thailand. It has also provided a wide range of animal nutrition solutions to approximately 50 countries worldwide.

The acquisition is based on the belief that Devenish Nutrition's management philosophy, which has developed and supplied various technology-based solutions for customer success and long-term growth, is consistent with EASY BIO's mission, "the value-added solution of feeding tomorrow," which is to provide customers with valuable sustainable livestock solutions. The solutions, technologies, and sales power of the two companies' respective portfolios are expected to enable mutual strategic supplementation and synergy creation in the future, increasing competitiveness in North America and enabling customer satisfaction through more diverse and differentiated solutions in global markets.

## NOVUS Teams Up with Halchemix to Serve Canadian Poultry, Swine, and Dairy Producers

Beginning March 1, 2024, Halchemix will be the exclusive distributor of NOVUS' MINTREX® Bis-Chelated Trace Minerals and MHA® Feed Additive, as well as the



sales agent for ALIMET® Feed Additive. This collaboration aims to broaden NOVUS' presence in Canada's agriculture sector, particularly among poultry, swine, and dairy producers.

The decision to collaborate with Halchemix was motivated by the desire to efficiently serve customers across Canada's vast geography. While Halchemix will handle sales and distribution, NOVUS' technical services team will continue to assist customers and provide assessments via the C.O.W.S.® Programme. Furthermore, Halchemix will handle the sale of ALIMET® Feed Additive, with NOVUS managing the supply chain via the AIMS® system and using Ruan as a trucking partner for methionine delivery.

Halchemix, founded in 1986, specialises in trucking, formulation, and technical support across Canada. President Lyndon Hiebert sees NOVUS products as a valuable addition to their already high-quality feed additives.

The collaboration reflects NOVUS' commitment to research-based products and a strong technical team that can adapt to changing customer needs. NOVUS intends to introduce additional feed additives from its portfolio to Canadian customers as regulations allow.

## DSM-Firmenich and DonauSoja Collaborate to Assess

## Environmental Impact of Animal Feeds



DSM-Firmenich and DonauSoja have teamed up to use the Sustell life-cycle assessment platform to evaluate the environmental impact of animal feeds and feed ingredients throughout the animal protein value chain. This collaboration aims to assist businesses throughout the value chain in improving and communicating their sustainability initiatives. The use of advanced LCA platforms such as Sustell enables precise measurement and improvement of sustainability, opening up new revenue streams and supporting initiatives like eco-labelling and sustainable financing.

Food production is a major contributor to global greenhouse gas emissions, with livestock emissions accounting for a sizable portion. Companies in the food value chain are increasingly under pressure to measure, report, and reduce their environmental footprints as a result of sustainability commitments, regulations, and consumer preferences. Animal feed has a significant impact on the environmental footprint of animal products, with protein sources such as non-certified soybean meal being major contributors to greenhouse gases. DonauSoja has conducted studies that demonstrate the potential reduction in carbon footprint of using certified European soya in animal feed.

The partnership between DSM-Firmenich and DonauSoja, which is supported by Sustell, aims to increase transparency in the feed and food industries, allowing for more sustainable food production and consumption. By conducting science-based calculations and promoting the use of certified European soya in animal feed, the partnership hopes to empower businesses to make more informed decisions that benefit both the environment and their own operations.

## WHO Publishes List of 21 Antimicrobials Approved Only for Human Usage



### World Health Organization

The World Health Organisation (WHO) has published the first-ever list of 21 antimicrobials approved for use only in humans, marking a milestone in the organization's efforts to protect critical first-line drugs from overuse in the animal and plant health sectors. Most of the 21 antimicrobials designated by WHO as "authorised for use in humans only" are novel compounds developed and approved over the last six years. The category primarily includes newer antimicrobials that are critical in treating severe multidrug-

resistant infections in humans.

Plazomicin, aminomethylcycline, anti-pseudomonal penicillins with and without  $\beta$ -lactamase inhibitors, carbapenems with or without inhibitors, third- and fourth-generation cephalosporins with  $\beta$ -lactamase inhibitors, sulfones, and drugs critical to treating tuberculosis and other mycobacterial diseases are among the authorised "for use in humans only" antimicrobials. Some of the older ones on the WHO list, such as carbapenems, are not approved for use in animals in the United States, but they are occasionally used in companion animals.

The report's goal is to provide guidance to authorities in the public and animal health sectors, veterinarians, antimicrobial prescribers, and agricultural professionals, as well as to categorise antimicrobials based on their importance to human use. A second category of medically important antimicrobials includes drugs "authorised for use in both humans and animals."

Widespread animal use of leading antibiotics has become a major contributor to the rise of "superbug" resistance to common drug treatments, or AMR. In 2019, AMR was linked to the deaths of nearly 5 million people globally. To address these risks, critical antimicrobials must be used more systematically in both animal and human health. The WHO's drug classifications establish an order of priority for doing so, with antimicrobials listed as 'authorised for use in humans only' posing the greatest risk to human health when used in non-human sectors. Reducing antimicrobial use in the non-human sector is critical to maintaining the efficacy of these substances.

## Blacksmith Medicines and Zoetis Combine Forces to Address Antibiotic Resistance in Veterinary Medicine



Blacksmith Medicines, Inc. and Zoetis, the world's leading animal health company, have announced a collaboration to discover and develop new antibiotics for animal use. Antibiotic resistance can spread between animals and humans, which is especially bad for antibiotics, which are the last line of defence against serious infections in humans. Blacksmith and Zoetis will work together to selectively target bacteria for animal health, leveraging their extensive pathogen collection and veterinary expertise.

Metalloenzymes perform essential biological functions by utilising a metal ion cofactor in the enzyme active site. Small molecule chemistry limitations have historically made it difficult to drug this diverse class of targets. The Blacksmith metalloenzyme platform has solved this problem by leveraging a large proprietary fragment library of metal-binding pharmacophores (MBPs), a comprehensive database containing a full characterization of the metalloenzyme genome, a first-

of-its-kind metallo-CRISPR library of custom single guide RNAs, an industry-leading metalloenzyme computational toolkit for docking, modelling, and structure-based drug design, and a robust and blocking intellectual property

Zoetis, the world's leading animal health company, is driven by a single mission: to improve animal care in order to benefit our planet and humanity. With a portfolio and pipeline of medicines, vaccines, diagnostics, and technologies that benefit over 100 countries, the company generated \$8.1 billion in revenue in 2022 and employed approximately 13,800 people.

Blacksmith Medicines is developing drugs that target metal-dependent enzymes, which account for more than 30% of all known enzymes.

The platform uses a focused library of metal-binding pharmacophores and proprietary computational modelling approaches to quickly and rationally design small molecule inhibitors that interact with key metal ions in the enzyme's active site. Blacksmith has entered into strategic drug discovery collaborations with BasileaPharmaceutica International Ltd., Cyteir Therapeutics Inc., Eli Lilly and Company (Lilly), Hoffmann-La Roche Ltd., and Zoetis LLC.

## Veeva Vault selected by Boehringer Ingelheim for Clinical and Regulatory Management in Animal Health

Veeva Systems has announced that BoehringerIngelheim has selected the Veeva Vault Clinical and Veeva Vault RIM applications as the technology foundation for clinical and regulatory management in its animal health business unit. The integration of applications on a single platform will streamline clinical execution, accelerating the development of new medicines to help animals live healthier and happier lives. Marcus Gravendyck, head of global regulatory affairs and pharmacovigilance, Animal Health at BoehringerIngelheim, stated that these applications will improve operational efficiency across functions and provide insights for data-driven decision making.

BoehringerIngelheim will use Veeva Vault CTMS to manage and monitor trials, as well as Veeva Vault eTMF to



**"Veeva Vault Clinical and Veeva Vault RIM will help us drive higher operational efficiency across functions while providing the insights for data-driven decision making."**

**Marcus Gravendyck**

Head of Global Regulatory Affairs and Pharmacovigilance, Animal Health, Boehringer Ingelheim

[Learn More](#)

ensure real-time inspection readiness, visibility, and control. For advanced regulatory processes, the company plans to use Vault RIM applications such as Veeva Vault Registrations, Veeva Vault Submissions, and Veeva Vault Submissions Archive.

Connecting these applications to a single cloud platform allows for real-time data access and seamless information exchange.

Veeva Systems is dedicated to innovation, product excellence, and customer success, and serves over 1,000 clients, including the world's largest biopharmaceutical companies and emerging biotechs. Veeva, a Public Benefit Corporation, is dedicated to balancing the interests of all stakeholders, including customers, employees, shareholders, and the industries it serves.

## DSM-Firmenich's Plan to Separate Animal Nutrition and Health Division to Enhance Business Focus

DSM-Firmenich intends to separate its animal nutrition and health (ANH) division from the group because it faces unique challenges in the vitamin market. The separation would reduce DSM-Firmenich's exposure to vitamin earnings volatility and capital intensity, in accordance with its long-term strategy. The company believes that a different ownership structure, with all potential separation options taken into account, would best realise the ANH business's potential.

A separation would allow DSM-Firmenich to strengthen its position in human nutrition, health, and beauty by focusing solely on



perfumery and beauty; taste, texture, and health; and health, nutrition, and care units. This would increase their commercial potential and synergies, resulting in an attractive growth outlook with strong margins.

The separation of the ANH business is being considered, but Bovaer's critical role in reducing emissions in the dairy industry, an important segment for (taste, texture, and health), and Veramaris' significant potential in dietary supplements are expected to remain part of the group. Ivo Lansbergen will continue to lead the ANH business, which has grown into a global leader with scale, a distinct portfolio, and unparalleled innovation capabilities to assist customers in addressing food security issues and making animal farming sustainable.

ANH, headquartered in Kaiseraugst, Switzerland, generated more than EUR3 billion in revenue last year, employing approximately 6,000 people. It enables customers to deliver healthy animal proteins in an efficient and sustainable manner, while also leveraging data to make animal farming practices more sustainable, productive, and transparent. The global vitamins market has been in a prolonged downturn as a result of unprecedented cyclical pressure on vitamin prices in animal markets. As part of the vitamin transformation programme announced in June 2023, the company is making significant progress on its cost-cutting plan, with the company confident of achieving a contribution of EUR100 million in adjusted EBITDA in 2024 and the full benefit of EUR200 million in 2025.



**INDIAN HERBS SPECIALITIES Pvt. Ltd.**  
(Manufacturer & Exporter of Herbal Health Products)

The Pioneer & Market Leader in Herbal Animal Health Care Products Industry invites applications for the following post:

**MANAGER TECHNICAL (NORTH ZONE):** The candidate should be MVSc (Poultry / Animal Nutrition) with specialization in Poultry Nutrition and having 3-4 years experience in similar field. The candidate should also have good cordial relations with the customers / consultants.

We provide best working environment to our employees. Emoluments (Salary and Incentives) shall be highly attractive and shall commensurate with the best in the industry. Interested candidate may send their resume at-

[anand.gupta@indianherbs.in](mailto:anand.gupta@indianherbs.in)

[ihspl@indianherbs.org](mailto:ihspl@indianherbs.org)

ANAND GUPTA (Sr. Manager H.R.)

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# EGG

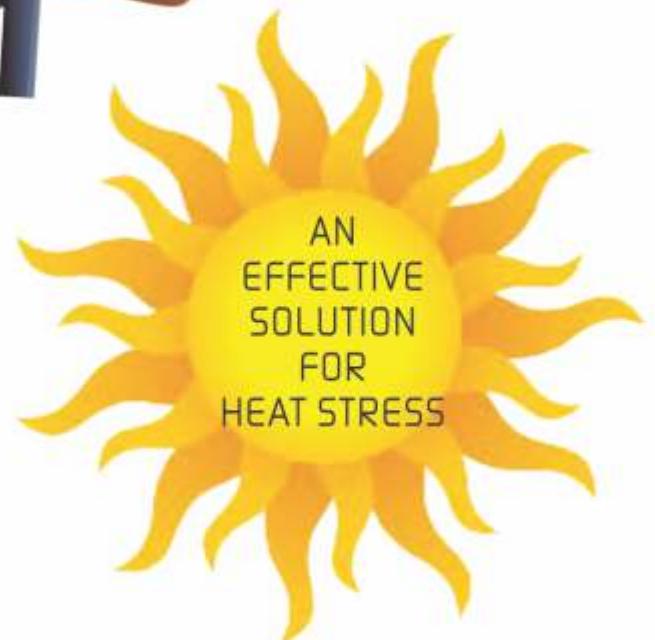
## Daily and Monthly

### Prices of February 2024

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	29	Average			
<b>NECC SUGGESTED EGG PRICES</b>																																	
Ahmedabad	550	550	555	560	565	570	575	575	575	575	575	575	575	575	575	575	578	580	580	580	580	580	580	580	580	550	550	550	530	568.90			
Ajmer	512	515	521	525	525	525	525	575	520	520	510	520	525	525	535	537	537	537	537	537	527	517	517	507	502	490	480	480	465	518.48			
Barwala	515	515	519	522	525	525	525	525	525	525	505	510	515	517	521	523	523	523	507	507	507	507	507	492	492	470	470	470	450	508.52			
Bengaluru (CC)	570	570	570	570	575	580	585	585	585	585	585	585	585	590	595	600	600	600	600	600	600	600	600	600	580	560	560	560	550	540	520	578.79	
Brahmapur (OD)	542	542	546	550	556	560	562	562	562	547	547	547	547	553	553	556	561	561	561	541	541	528	528	528	518	500	490	490	475	539.79			
Chennai (CC)	580	580	580	580	580	590	590	590	590	590	590	590	595	600	610	610	610	610	610	610	610	610	610	610	595	575	575	575	560	550	591.21		
Chittoor	573	573	573	573	573	583	583	583	583	583	583	583	588	593	603	603	603	603	603	603	603	603	603	603	588	568	568	568	553	543	584.21		
Delhi (CC)	562	552	550	550	555	555	545	545	540	540	540	540	540	540	540	540	543	543	543	543	532	532	532	532	525	525	510	510	510	538.41			
E.Godavari	525	525	528	533	538	543	546	546	546	530	530	530	533	536	536	539	542	542	542	542	525	515	515	515	515	490	475	475	460	524.72			
Hospet	530	530	530	530	535	540	545	545	545	545	545	545	545	550	555	560	560	560	560	560	560	560	560	540	520	520	520	510	500	480	538.79		
Hyderabad	520	525	530	535	540	545	545	545	545	545	545	545	545	548	551	554	554	554	534	534	534	520	520	500	500	490	460	460	529.93				
Jabalpur	530	530	535	550	550	560	560	550	550	550	550	560	560	560	560	560	560	560	560	545	545	540	530	530	520	510	500	490	543.62				
Kolkata (WB)	585	585	588	593	598	603	606	606	596	590	590	590	593	593	593	600	602	602	602	570	560	560	550	550	540	530	520	510	510	576.38			
Ludhiana	539	510	510	519	521	521	521	521	521	521	510	505	512	515	515	515	520	520	520	520	505	505	505	500	485	485	470	470	455	508.14			
Mumbai (CC)	585	585	590	595	600	605	610	610	610	610	610	610	610	610	610	613	616	616	616	604	594	594	580	580	570	560	560	545	596.83				
Mysuru	572	572	572	572	577	582	587	587	587	587	587	587	587	592	597	600	600	600	600	600	600	600	600	580	560	560	560	550	540	520	579.83		
Namakkal	520	520	520	520	525	530	535	535	535	535	535	535	540	545	550	550	550	550	550	550	550	550	550	540	520	520	520	510	500	480	531.72		
Pune	585	585	590	595	605	610	610	610	610	610	610	610	610	610	610	615	615	615	615	600	590	590	590	580	570	570	560	550	597.59				
Raipur	535	535	540	540	560	560	555	556	556	556	550	550	550	550	550	550	555	555	555	545	535	530	530	510	500	500	490	470	470	535.62			
Surat	570	570	575	580	590	590	590	590	590	590	590	590	590	590	590	595	595	595	595	595	595	595	585	585	580	580	565	565	560	560	583.79		
Vijayawada	525	525	528	533	538	543	546	546	546	530	530	530	533	536	536	539	542	542	542	542	525	515	515	515	515	490	475	475	460	524.72			
Vizag	545	545	550	555	555	555	555	555	555	555	555	555	555	555	555	555	555	555	555	535	525	525	525	525	500	500	500	500	541.72				
W.Godavari	525	525	528	533	538	543	546	546	546	530	530	530	533	536	536	539	542	542	542	542	525	515	515	515	515	490	475	475	460	524.72			
Warangal	522	527	532	537	542	547	547	547	547	547	547	547	547	550	553	556	556	556	536	536	536	522	522	502	502	492	462	462	531.93				
<b>Prevailing Prices</b>																																	
Allahabad (CC)	557	557	562	571	576	581	581	576	576	571	567	567	571	576	576	576	576	576	576	576	571	567	567	557	557	552	543	538	529	566.41			
Bhopal	550	530	530	545	550	550	550	550	550	550	545	555	550	550	550	550	550	550	550	550	550	550	540	540	540	520	510	500	490	541.21			
Indore (CC)	540	545	545	545	560	555	555	550	545	545	540	540	555	550	550	560	560	560	560	560	550	545	545	535	530	520	510	510	500	543.62			
Kanpur (CC)	552	552	552	552	567	567	567	567	552	552	543	543	543	548	548	552	552	552	552	552	552	552	552	543	543	543	529	529	529	549.55			
Luknow (CC)	600	600	600	600	600	590	590	583	583	583	583	583	583	583	583	583	583	583	583	583	583	583	583	583	567	567	567	550	550	550	581.93		
Muzaffarpur (CC)	578	578	580	585	585	585	585	585	585	585	565	570	575	580	580	582	582	582	582	570	565	565	565	555	550	550	530	530	515	510	567.31		
Nagpur	520	520	530	530	530	570	560	570	570	560	560	560	570	570	570	570	570	570	570	570	570	570	570	560	560	555	550	530	530	510	550.52		
Patna	578	578	580	585	585	585	585	585	585	585	565	570	575	580	580	582	582	582	582	570	565	565	565	555	550	550	530	530	515	510	567.31		
Ranchi (CC)	586	581	581	586	586	586	586	586	586	586	580	580	580	586	590	590	590	590	590	590	590	590	586	586	581	571	571	562	552	538	533	524	576.90
Varanasi (CC)	583	583	590	597	597	597	583	583	583	583	573	573	573	577	577	577	583	583	583	567	567	567	567	567	557	550	533	523	523	572.38			

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Chromium protienate  
with a natural Vitamin-C  
substitute for thermal stress



# Editorial Calendar 2024

Publishing Month: <b>January</b> Article Deadline : <b>28<sup>th</sup>, Dec. 2023</b> Advertising Deadline : <b>30<sup>th</sup>, Dec. 2023</b> Focus : <b>Opportunities and Challenges</b>	Publishing Month: <b>February</b> Article Deadline : <b>28<sup>th</sup>, Jan. 2024</b> Advertising Deadline : <b>30<sup>th</sup>, Jan. 2024</b> Focus : <b>Budget</b>	Publishing Month: <b>March</b> Article Deadline : <b>26<sup>th</sup>, Feb. 2024</b> Advertising Deadline : <b>28<sup>th</sup>, Feb. 2024</b> Focus : <b>Disease Prevention</b>	Publishing Month: <b>April</b> Article Deadline : <b>28<sup>th</sup>, March 2024</b> Advertising Deadline : <b>30<sup>th</sup>, March 2024</b> Focus : <b>Summer Stress Management</b>
Publishing Month: <b>May</b> Article Deadline : <b>28<sup>th</sup>, April 2024</b> Advertising Deadline : <b>30<sup>th</sup>, April 2024</b> Focus : <b>Cold Chain</b>	Publishing Month: <b>June</b> Article Deadline : <b>28<sup>th</sup>, May 2024</b> Advertising Deadline : <b>30<sup>th</sup>, May 2024</b> Focus : <b>Nutrition</b>	Publishing Month: <b>July</b> Article Deadline : <b>28<sup>th</sup>, June 2024</b> Advertising Deadline : <b>30<sup>th</sup>, June 2024</b> Focus : <b>Biosecurity</b>	Publishing Month: <b>August</b> Article Deadline : <b>28<sup>th</sup>, July 2024</b> Advertising Deadline : <b>30<sup>th</sup>, July 2024</b> Focus : <b>Sustainability</b>
Publishing Month: <b>September</b> Article Deadline : <b>28<sup>th</sup>, August 2024</b> Advertising Deadline : <b>30<sup>th</sup>, August 2024</b> Focus : <b>Egg Production &amp; Processing</b>	Publishing Month: <b>October</b> Article Deadline : <b>28<sup>th</sup>, September 2024</b> Advertising Deadline : <b>30<sup>th</sup>, September 2024</b> Focus : <b>Processing &amp; Packaging</b>	Publishing Month: <b>November</b> Article Deadline : <b>28<sup>th</sup>, October 2024</b> Advertising Deadline : <b>30<sup>th</sup>, October 2024</b> Focus : <b>Winter Stress</b>	Publishing Month: <b>December</b> Article Deadline : <b>28<sup>th</sup>, November 2024</b> Advertising Deadline : <b>30<sup>th</sup>, November 2024</b> Focus : <b>Food Safety</b>

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# ASTICON - SDS<sup>®</sup>

FOR EFFECTIVE CONTROL OF ASCITES  
AND SUDDEN DEATH SYNDROME

**BIOSINT<sup>®</sup>**  
NUTRITIONAL INNOVATIONS



## KEY BENEFITS

ASTICON-SDS helps in

- Effectively controls the accumulation of fluid in the abdominal cavity
- Improving the cell health and energy function;
- Acts as a free-radical scavenger and cellular antioxidant
- Effectively controls SUDDEN DEATH SYNDROME
- Assists in promoting general health and well being.

## MODE OF ACTION

ASTICON-SDS serves as an important antioxidant to protect biological membranes against peroxidative damage in tissues and sub-cellular fractions, improves the bird's cardiac muscle function significantly and acts as a trigger to activate energy liberation in deteriorating mitochondria, thereby reverse the fluid accumulation in the abdomen.

## COMPOSITION

Alpha Lipoic Acid, Resveratrol, Mecobalamine, Folic Acid and Betaine Anhydrous.

## INCLUSION LEVELS

1g/25 birds and 400g/MT of feed.

## PRESENTATION

5Kg and 25Kg poly-coated paper bags

## SHELF LIFE

3 years from the date of manufacture

**BIOSINT<sup>®</sup>**  
NUTRITIONAL INNOVATIONS

For Further Details

**BIOSINT NUTRACEUTICALS,**

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Corporate Office : 37, Krishna Nagar, KK Pudur 4th St, Coimbatore - 641 038.

Telefax : +91- 422 - 2430275, Mobile : 094435 17258

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

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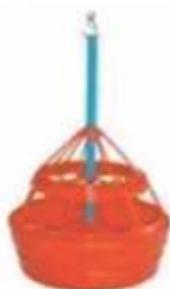
Male Parent



Jambo Feeder with Cone Extension



Female Parent Feeder



Male Parent Feeder



Jambo Female Parent Feeder



Pan Feeding



Chain Feeding

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