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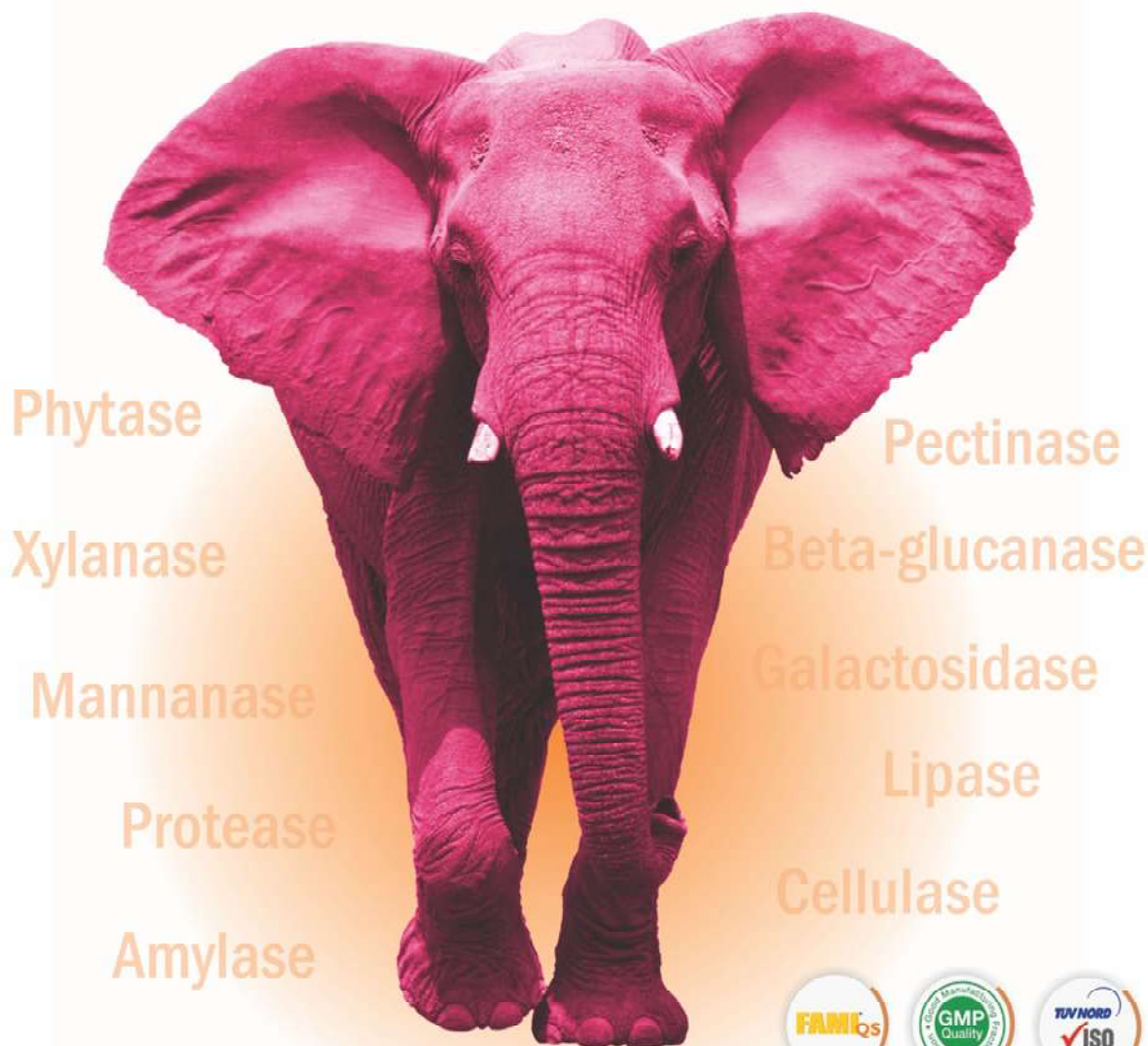
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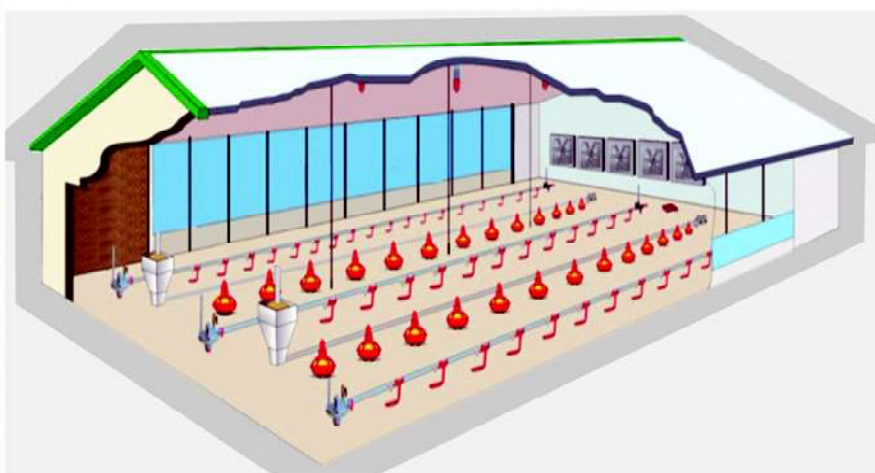
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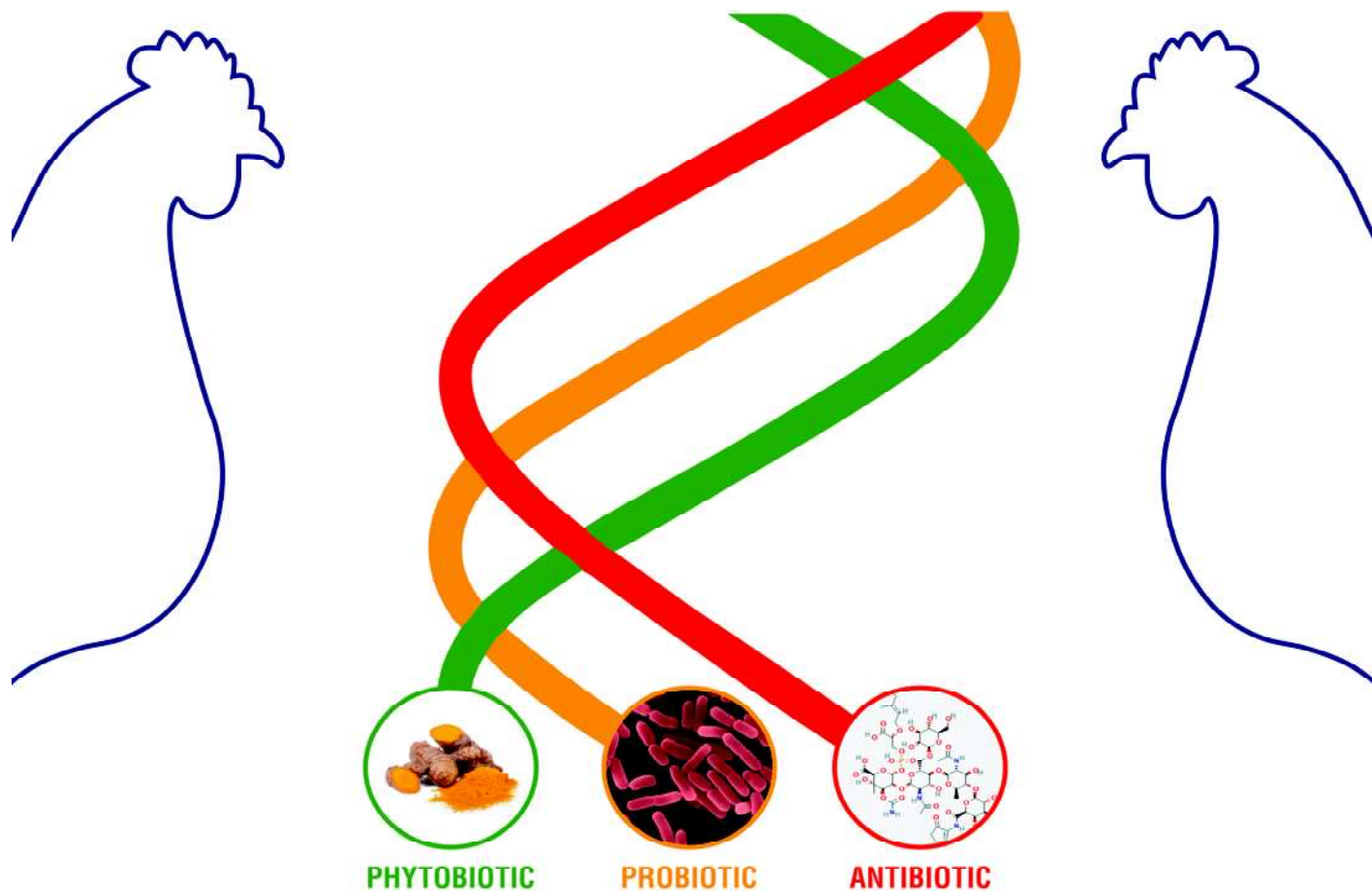
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# Nutritional importance of Aloe vera (Aloe barbadensis) and its useful impact on poultry

\*Dr. Pallabi Das<sup>1</sup> and Dr. Akshay R. Bariya<sup>2</sup>

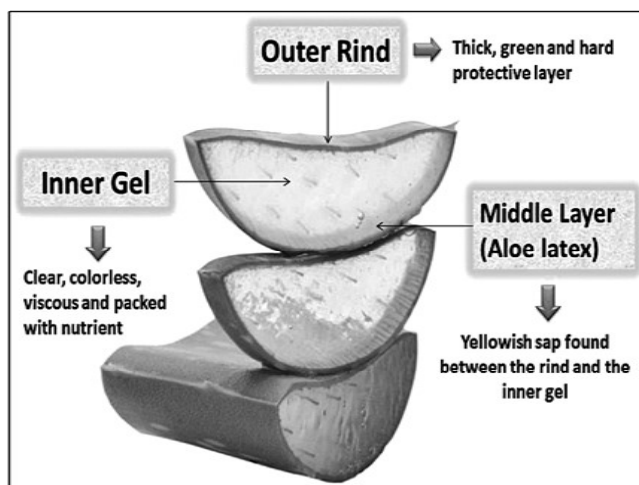
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Researchers are concerned about the presence of various natural substances like medicinal herbs, which, as a new class of additives to animal and poultry feeds, have beneficial properties such as anti-oxidant, anti-microbial, and anti-fungal (Hardy B, 2002) as well as immune-modulatory and anti-coccidial effects. High genetic potential, appropriate feeding, and health management are the most important components for effective poultry production. There are a variety of medicinal herbs available that can be utilized as natural feed additives for poultry. Herbal remedies aid digestion, and because they are natural, they are considered safe, cost-effective, and environmentally friendly, with no adverse effects. As a result, including them in the diet should be promoted to increase the bird's performance, feed utilization, health, and reduce the negative effects of environmental stress.

In traditional medicine, aloe vera is one of the oldest therapeutic plants. Its name comes from two terms (aloe and vera), with aloe denoting a bright bitter ingredient and vera denoting 'true' (Surjusheet *et al.*, 2008). Aloe is grown in about 250 different species all over the world. However, only two species are commercially farmed today, the most popular being Aloe barbadensis and Aloe arborescence. Aloe vera is called as "Ghritokumari" in India and is used in herbal formulations. This translucent gel comprises amino acids, minerals, vitamins, enzymes, proteins, polysaccharides, and biological stimulators, according to chemical analysis. Feed accounts for 60-65% of the cost of chicken production. There is a huge demand for lower feeding costs and more effective nutrient use for a higher economic return. Natural products are completely safe for broilers and have no aftereffects. More than 200 physiologically active chemicals were discovered in the plant's chemistry, including vitamins, minerals, enzymes, sugars, anthraquinones or phenolic compounds, lignin, saponins, sterols, amino acids, and salicylic acid (Coats *et al.*, 1997). Several studies have demonstrated that herb extract has antibacterial



characteristics that can promote intestinal micro flora population and improve the health of broiler digestive systems by reducing the quantity of disease-causing bacteria.

## Mode of Action

Herbs and plant extracts have yet to be fully understood in terms of their mechanism of action. Antibacterial, coccidiostatic, antihelminthic, antiviral, anti-inflammatory, and especially antioxidant activities are found in most plants. Herbs and their mixtures can help birds perform better by enhancing digestive tract function, as well as having anti-inflammatory, anti-oxidative, and anti-microbial properties. Some herbs also have impacts on various physiological systems. Herbs may have numerous functions in the bodily system of birds (Hernandez, 2004). The majority of them are

### Effect of different herbs on the performance of Poultry

S. No	Herb	Level	Effect	References
1.	<i>Aloe (A.) vera</i> polysaccharides	100, 200 and 300 mg.kg-1 body weight	Daily weight gain, Percent protection and anti-coccidial indices were higher in administered groups as compared to control.	Khaliq <i>et al.</i> , 2017
2.	Ethanol and aqueous extracts of <i>Aloe vera</i> pulp	300 mg/kg body weight/day for 3 days	Significantly increased antibody titer in broilers against SRBC compared to the control group.	Akhtar <i>et al.</i> (2012)
3.	<i>Aloe vera</i>	1.5%, 2%, and 2.5% in feed	Improved intestinal microflora, increased <i>Lactobacillus</i> count and decreased <i>E. coli</i> count in broilers.	Darabighane <i>et al.</i> , 2012
4.	<i>Aloe vera</i> powder	0.5%, 0.75% and 1% AV gel in drinking water	Smaller fecal oocyst shedding count compared to infected group fed with the standard diet.	Yim <i>et al.</i> (2011)
5.	<i>Aloe vera</i>	0.1% Aloe vera gel	Reduced <i>E. coli</i> count while increased the number of <i>Lactobacillus</i> and <i>Bifidobacteria</i> .	Dai <i>et al.</i> (2007)
6.	<i>Aloe vera</i> leaf powder	1.5, 2.0 and 2.5%	Positive trends in carcass dressing percentage, liver, heart, gizzard, spleen, intestine and abdominal fat in broiler chicken	Mohamed <i>et al.</i> 2017
7.	Fresh whole leaf extract of <i>aloe vera</i>	Extract in drinking water (20 g/l) daily for 42 days	Increase the dressing percentage	Singh <i>et al.</i> 2013

### Effect of different herbs on the layers performance

S. No	Herb	Level	Effect	References
1.	<i>Aloe vera</i> powder	0.1%	White Leghorn birds that were fed with <i>Aloe vera</i> as additive resulted in layers producing significantly more eggs and heavier compared to Control layers.	Moorthy <i>et al</i> (2009)
2.	<i>Aloe vera</i>	100 ml/litre water	Japanese quails where the total cumulative egg number and the hen day egg production including the albumin diameter were significantly higher in supplemented quails than the control.	Hasan, 2014



sialagogues, which promote saliva secretion and make swallowing easier. The most essential feature of Aloe vera (*Aloe barbadensis*), which is found in tropical and sub-tropical climates, is its leaf, which is made up of two primary sections: latex and gel (Boudreau and Beland, 2006). The gel found in Aloe vera leaves is 98.5 percent to 99.5 percent water (Femenia *et al.*, 1999) with the remaining dry matter containing over 75 physiologically active chemicals (Boudreau and Beland, 2006) with therapeutic qualities. The anti-inflammatory, immunomodulatory, wound-healing, anti-viral, anti-fungal, anti-tumor, anti-diabetic, and anti-oxidant actions of Aloe vera are attributed to anthraquinones, saccharides, vitamins, enzymes, and low-molecular-weight chemicals (Choi S and Chung, 2003; Christaki and Florou-Paneri, 2010).

### Conclusions

Aloe vera is a plant that has been used for centuries for its medical properties. Its use as a chicken feed supplement can improve the bird's productivity and physiological health. Because aloe vera contains antibacterial and immunomodulatory properties, it can help to enhance gut health and thus performance. For the development of aloe vera applications in the poultry sector, research is required to determine the mode of action, effective form, and dose levels (in feed and drinking water).

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# Seafood Supply Chain Management: Environmental Approaches

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## Abstract

To ensure the utmost reduction in environmental impact, seafood supply chain management system should incorporate lifecycle assessment (LCA) modelling. This article discusses on identification, development and implementation of cleaner production strategies within the seafood industry. Supply chain stages (aquaculture, wild capture, transport, processing, storage and retail) were discussed separately to improve cleaner production processes and outputs to grow seafood businesses. The most effective cleaner production strategies (CPS) for reducing negative environmental impact in each sector of the supply chain were identified with their potentials to reduce unnecessary handling, energy usage, storage costs and waste production.

## Introduction

Seafood supply chain or in any other food supply chain efforts will be spent for improving the processes and outputs for business growth. Companies value chain progresses with social, economic and environmental improvements only when it benefits their business. For constant growth, individual companies need to develop strategies with their suppliers and customers to increase the effectiveness of cleaner production strategies. Implementing environmental supply chain management systems by companies will continuously monitor and can subsequently reduce the negative impact on the environment. The management practice should take account of all stages of the seafood supply chain, including the environmental impact along the whole life cycle of the product. There is limited information on environmental supply chain management research in the seafood industry; therefore, this article briefs about the important cleaner production strategies (CPS) implemented across the seafood supply chain.

## Aquaculture

Aquaculture involves farming of aquatic organisms such as fish, shellfishes and seaweeds. These activities potentially cause environmental impacts by feed production, breeding, fish growth and harvest.

Feed production causes more environmental impact, Life cycle assessments (LCA) study demonstrates that up to 90% of all energy use in aquaculture is from producing feed. The principal environmental issue is the energy consumption, ingredients used and the feed quantity required per kilogram of seafood. Another reason for the high impact of feed is linked with the harvesting of the fish used for feed. For example, krill harvested in Antarctica requires transportation to feed production house in its natural form, using diesel in boat fuel. Increasing the harvest quantity per trip and reducing fuel consumption by 40% during harvest were shown to improve energy efficiency, implementing the 'good housekeeping' CPS. The impact of the feed depends on the ingredients used. The food chain influences the emissions as carnivores release nitrogen and phosphorous wastes from a high protein diet. Therefore, vegetarian diets are recommended as they have a lower environmental impact. However, a vegetarian diet is not necessarily as efficient, as it reduces the growth rate. So, measuring the carbon footprint, aquaculture sector has found the feed has the greatest impact and highlights potential CPS to reduce this.

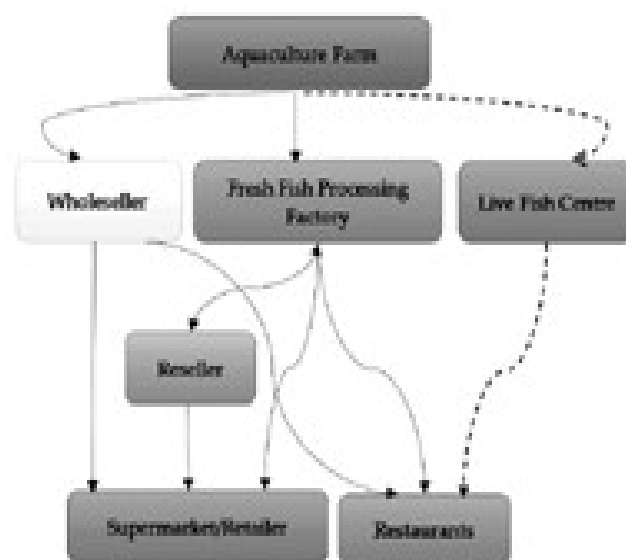


Fig 1. Supply chain management in Aquaculture



## Wild capture

Fishes caught in wild from their natural habitat have a different environmental impact to the cultured fish. Seafood capture has more impact than culture. Though LCAs have been widely used in wild caught seafood, research is lacking in how their use benefits the entire seafood supply chain. Therefore, this section reviews the CPS applied within the wild capture section of the supply chain.

CPS have been suggested and applied to wild caught fisheries to reduce diesel use.

- Reducing the water resistance and air resistance by increasing the vessel length and clearing the deck area respectively
- Alternative sources to diesel
- Choosing the type of engine which uses less diesel
- Increasing the fishing efficiency by installing GPS and colour sounder

All of above examples of technology modification by CPS that are available for wild capture fisheries to reduce fuel consumption for harvesting. The efficiency and environmental impact can also be reduced by minimising by-catch. By-catch brought to shore can be converted into new products is another way of improving the efficiency and environmental impact of the wild capture stage. Unused fish can easily be made into fertiliser and fish meal.

## Transport

Transporting seafood products between the stages of supply chain is an important process. Environmental impact is minor compared to seafood capture and culture. The environmental impact of transport in the seafood supply chain is challenging to measure as it depends on production and distribution costs. Therefore, it is important to categorize the mode of transport and the impact of processing when developing CPS. The mode of transport for seafood products affects the environmental impact. Travel by ship has a very low impact, but requires the product to be maintained in frozen state to maintain quality. For a frozen product, transportation by ship has lowest environmental impact, followed by truck and then air freight. For fresh fish transportation from East Asia to Norway to by truck and aeroplane required ten times the energy required to transport frozen fish by truck and ship.

Three steps can be applied to reduce the emissions from transport methods by recording the travel distance of food, Briefing the consumers know the impact the travel on environment and increasing the efficiency of the transport methods. By evaluating the transport methods and environmental impacts, CPS can be developed to increase efficiency and thus can reduce the carbon footprint. The mode of transport and environmental impact depends on the processing techniques applied for seafood. Due to the refrigeration energy consumption and high cost, it is better to recommend for processing methods such as drying, smoking or freezing before exporting. Thus, it does not require overnight delivery, instead alternative long term mode of transportations like ship or trucks can be used. The transport sector is important to consider within the seafood supply chain as the mode of transport chosen relies on the processing and final product.

## Packaging and processing

The method of packaging seafood products differs according to the purpose thus can result in different environmental impacts. The packaging material or technology used is influenced by the final market and assists in reducing drip loss by confining the fluid retention in the product itself. Processing and packaging requires more energy when the seafood products are associated with different packaging techniques which maintain the final weight of the product. For shelf life extension, it is recommended applying modified atmosphere packaging (MAP) as energy, heat and power are considerably less than thermal pasteurisation (Canning) and high pressure processing (HPP). MAP involves gas flushing the product, usually with inert gases to increase shelf life. If shelf life extension is not required, then packaging seafood in plastic bags is a better alternative. Depending on the product, a packaging method can be designed to reduce the environmental impact, applying the "product modification" CPS. The regular monitoring identified areas are: increased maintenance of refrigeration equipment (good housekeeping); execution of wastewater treatment systems (recycling waste); and application of machinery best practice, maintenance and preventative measures (good housekeeping). Maintaining product quality, especially within processing facilities is an example of a good housekeeping CPS. By implementing a quality assurance system such as HACCP (Hazard Analysis and Critical Control Point) in a processing

**Table 1.**List of cleaner production strategies recommended in the seafood supply chain.

Type of cleaner production	Strategy
<b>Aquaculture</b>	
Good housekeeping	Increased krill harvest quantity (per trip) used in feed production reduced impact of fish feed
Technology modification	Used a boat fuel efficiency method reduced impact of fish feed
Input substitution	Used plant resources instead of protein for feed production
<b>Wild caught</b>	
Technology modification	Boat structural changes increased energy efficiency in wild capture
Technology modification	Use of GPS and colour sounder reduced fuel consumption
Technology modification	Boat engine choice increased energy efficiency
<b>Transport</b>	
Technology modification	Ship freight had the lowest carbon footprint impact, followed by truck and air freight
Good housekeeping	Process fish before transporting to reduce product weight, space required and refrigeration
<b>Processing and packaging</b>	
Product modification	Modified atmosphere packaging used less power than thermal pasteurisation and high pressure processing
Input substitution	Use of plastic bags instead of tins to reduce weight of the packaging wastage
Recycling waste	Recycling waste water
Good housekeeping	Quality control costs reduced over time using HACCP
<b>Storage</b>	
Good housekeeping	Super chilling used less power than freezing and ice production
Technology modification	Refrigerator maintenance reduced leakage of the refrigeration gas
Technology modification and Input substitution	Changing the coolants to R22 reduced the greenhouse gases emitted
Product modification	Space was increased for the edible portion of the fish by removal of heads and tails
<b>Retail outlet</b>	
Technology modification	An air curtain maintained temperature of display cabinet where fish fillets were stored during retail opening hours
Product modification	Reduced packaging in retail market

environment, regular product monitoring will result in higher quality product and thus few rejected products. Therefore, by handling the product quality from the beginning, the quantity of rejects can be reduced, which results in higher yield and reduced waste.

Reducing fish wastage mitigates carbon dioxide and methane emissions released by anaerobic digestion process. Therefore, by maintaining quality and reducing the wastage, a greater yield can be sold, thus benefitting the processor from applying the good housekeeping CPS. Another way of reducing waste and maintaining product quality by using expiry dates. Although seafood products expiry dates are

set according to the age of the product and doesn't take storage temperature and initial bacterial count into account. Freezing reduces wastage if fish sales are unlikely before the expiry date. Although freezing requires energy and refrigerants, adding to the environmental impact (ozone layer depletion), it also increases the percentage of sellable product, providing revenue from fish which would otherwise be lost in wastage. Processing of seafood includes filleting of fish and disposing of other seafood waste, and using the waste to create a by-product may increase resource efficiency and profits. Processed seafood by-products can be used for fish feed, pet food and liquid fertiliser. Edible products

including fish sauce, fish oil and calcium can also be produced from processing fish waste. These by-products are an example of the waste recycling CPS.

### Storage

The storage of fish causes potential environmental impacts such as global warming, ozone depletion and solid waste. Fish or fish products can be frozen, refrigerated or kept on ice. Chilling reduces the temperature of the fish or fillet to 1 to 4 °C, reducing the need for ice and slowing biochemical changes, without causing the structural changes of freezing. Freezing the product and keeping it frozen throughout its life cycle uses similar energy consumption to ice production, thus creating similar emissions. Storage space can be used more efficiently, particularly in a refrigerator or freezer thus reducing the energy and refrigerants required. Space can also be better utilised by removing the fish heads and tails, again, increasing the proportion of edible product in the storage space available. By reducing the requirement of ice, or storing a waste product, the quantity of refrigeration gases per kg of edible product decreases, thus creating a good housekeeping CPS. The type of refrigerant used makes a difference in the global warming potential and ozone layer depletion over time. Therefore, modifying the refrigerant is required to reduce the carbon dioxide equivalent emissions released.

### Retail

Once the product arrives in the retail outlet, it is stored in a refrigerated display cabinet until sale, when it is packaged for the consumer. Consequently, at this stage of the supply chain the product temperature and the final packaging influences the environmental impact. One strategy in retail is to maintain the product temperature in the display cabinet. Opening the display cabinet doors continually throughout the day leads to temperature changes affecting the product quality. Air curtain can be used to retain the cabinet temperature when the door is open. An air curtain is a stream of chilled air streaming down the entrance to the cabinet, providing a barrier and preventing outside heat entering the cabinet. Hence, temperature can be maintained throughout without the cabinet straining, conserving energy using a good housekeeping CPS.

### Conclusion

While considering environmental supply chain management in seafood, all sections of the supply chain need to work together to create viable strategies. Furthermore, the LCAs should be applied in culture, capture, transport and processing to assess environmental impacts. LCA provides a strong basis for targeting cleaner production initiatives in, for instance, an 'eco-fish' supply chain, useful tool to measure the environmental impact and highlight areas throughout the supply chain where CPS can be implemented.

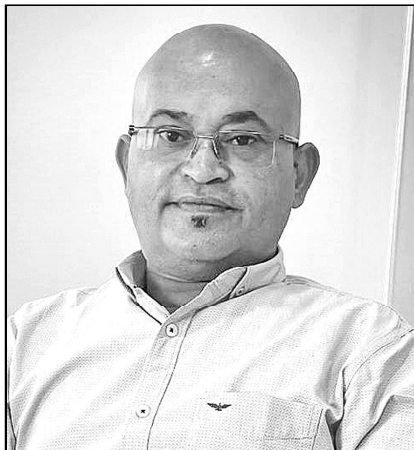
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## Proteon Pharmaceuticals appoints Dr Sachin Ingewar as Regional Sales Director, India Subcontinent and South East Asia region

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



**Dr Sachin Ingewar**

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

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

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

Elaborating on his new role at Proteon Pharmaceuticals, Dr Sachin Ingewar said, "This leadership role at Proteon is to develop our business in bacteriophages in the ISC and SEA and strengthen the presence of Proteon in the region. Our aim is to help poultry, aqua and the ruminant industry to achieve safe and sustainable production.

We aim to build awareness about a need to reduce the usage of antibiotics in animal production. All in all, we are here to stay: #CareForAll- environment, humans and animal wellbeing." Commenting on Dr Sachin's joining, Dr Paolo Doncecchi, Global Sales Director, Proteon Pharmaceuticals, said, "I am excited about this critical addition to our ISC Proteon organization. Dr Sachin will bring market knowledge, business acumen and empathic approach to people. Together, we will bring Proteon to new heights by serving customer needs."

### **About Proteon Pharmaceuticals**

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

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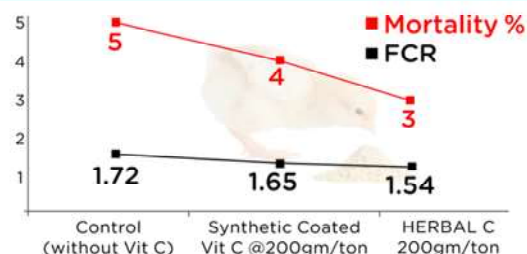
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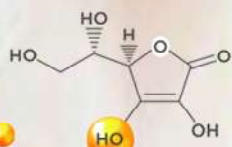
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## SUMMER STRESS

Heat stress due to summer has several serious and economical effects on poultry. In broilers it can cause reduced growth rate, decreased feed intake and poor feed conversion. Laying birds experience a drop in egg production, poor egg weight and reduced eggshell quality.

### THERMOREGULATION IN POULTRY

The poultry rearing is well managed in temperature between 21-25°C which is called as thermo neutral zone; temperature above 35°C will cause heat stress to birds causing physiological changes. Chickens, unlike most other animals, do not possess sweat glands to aid in heat loss. Chicken removes excess body heat by following mechanisms.

**Radiation-** Heat will radiate from the bird's warmer body to a cooler surface, such as air, without the use of a medium (surface).

**Conduction-** Heat stressed birds will try to cool their bodies down by touching water pipes or digging into litter to come into contact with a cool floor.



**Convection-** Moving air over birds is the most effective way to reduce heat stress. If the air is not moving quick enough, heat will begin to build up around the birds, which will increase heat stress.

### PHYSIOLOGICAL & BEHAVIORAL CHANGES DURING HEAT STRESS

Under high temperature conditions, birds alter their behavior and physiological homeostasis seeking thermoregulation, thereby decreasing body temperature. Following are the important changes which adversely affects the performance.

#### REDUCED FEED CONSUMPTION

Water intake increases which leads to loose or watery droppings and increased volume of urine causes wet litter condition. This makes the litter environment favorable for the sporulation of coccidian spores. Decreased blood flow to digestive tract causes immunosuppression, dysbacteriosis results into coccidiosis and necrotic enteritis

**HYPERVENTILATION OR PANTING** - Evaporation of one gram of water from lungs dissipates 540 calories of maintenance energy due to increased muscle activity, hence it is said that summer feed should have more energy.

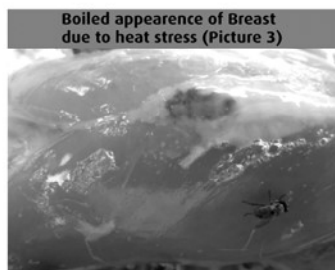
Increased panting under heat stress conditions leads to increased carbon dioxide levels and higher blood pH (i.e., alkalosis). It also makes birds more prone to respiratory distress. Because of rapid panting (up to 10 times more than normal) and oxidative stress, degradation of cilia occurs which facilitates lodgment of Mycoplasma. As the heat stress elevates the multiplication of Mycoplasma it further causes respiratory distress, air sacculitis. Though Mycoplasma as own doesn't cause mortality it results into Immunesupppression and occurrence of secondary infection. Some epidemiological studies also suggests that prevalence of viral diseases like IBD, VVND, etc. which causes



Immunesupppression. This also leads to occurrence of mycoplasmosis and further respiratory diseases. Increased loss of minerals like sodium, potassium, etc. through panting disturbs the electrolyte balance.

### HORMONAL CHANGES DURING HEAT STRESS

High environmental temperatures alter the activity of the neuroendocrine system of poultry and elevate plasma Corticosterone concentrations. Increased Corticosterone concentrations i.e. epinephrine and nor epinephrine causes increase in blood pressure, muscular tone and blood sugar levels. The combined effect results into increased mentainance energy which ultimately reduces the performance of the bird.



### EFFECT OF HEAT STRESS ON IMMUNE -RESPONSE

Increased environmental temperature causes Immunosuppression by reducing growth of bursa, GALT and spleen, Circulating antibodies, lymphocytes, phagocytic activity of macrophages, etc. Immunosuppression jeopardizes the birds into infection by opportunistic pathogens like mycoplasmosis, coccidiosis, necrotic enteritis, E.coli, ND, IBD, etc.



## CLINICAL SIGNS

Low feed intake Increased water intake Diarrhea or loose droppings Incidence of ascites increases Panting and rapid respiration Poor FCR and lower body weight Reduction in egg production, egg size, egg weight, and poor shell quality.

## POST-MORTEM FINDINGS

Dehydrated carcass Cooked breast appearance Mucous exudates in mouth and nostrils Pale or cyanotic comb Par boiled appearance of breast Increased body temperature Fluid contents in intestine Rapid decomposition of carcass.

## HEAT STRESS MANAGEMENT

To overcome the huge economic loss by heat stress, control should be based on following steps-

### MANAGEMENT ASPECT

- Hang wet gunny bags on the sides.
- Evaporative cooling- Sprinklers are commonly used for evaporative cooling when temperatures are more than 40-41°C.
- Stocking density- Reducing the bird density in summer will give more floor space per bird and allow more heat to escape from underneath their bodies and from the litter.
- Ventilation- Proper ventilation is crucial for heat stress management. A good ventilation system removes moisture, brings in an equal amount of fresh outside air, directs incoming air to all areas equally, keeps inside air moving to flush hot, humid air from between the birds, etc.



### NUTRITIONAL ASPECT

#### FEEDING PRACTICES

As there is decrease in daily feed intake increase the nutrition density, make the feed more concentrated. If there is enough floor space, extra feeders should be added. Encourage eating at cooler times of the day, i.e., early morning or in the evening. Remove feed 4 to 6 hours prior to an anticipated heat stress period. Birds should not be fed or disturbed during the hottest part of the day. Provide cold water for drinking especially during day times.

**ENERGY-** In order to provide higher energy levels fat inclusion should be more in feed which increases calorific value, palatability, feed intake by 5% and utilization of nutrients.

**PROTEINS-** The requirements for protein and amino acids are independent of environmental temperature. Oxidation of protein also elevates the heat stress hence it is good to keep protein level low with balanced amino acids. Hence low protein levels (1-2% lower than usual) with higher critical amino acids i.e. lysine and methionine (5-10% higher than usual) is more helpful in managing heat stress.

### MINERALS & VITAMINS

The loss of activity of vitamins during storage at high temperature is prime concern during summer which makes it unavailable for bird. Heat stress also disturbs synthesis of vitamin C and absorption of vitamin A and E. Hence to avoid problems of vitamin deficiency due to above stated reasons 20-30% extra vitamins should be provided to the birds.

Vitamin C-200-500 gm/ton of feed, Vitamin E- 50 gm/ton of feed should be provided.

### ELECTROLYTES

0.5-0.6% potassium and 0.5% sodium bicarbonate should be added to neutralize the respiratory alkalosis and its consequences.

### MEDICATION

Proper preventive measures to avoid respiratory and gut health problems should be taken during summer as these two systems are getting more involved.

Antimycoplasmal agents (**Pharmasin**<sup>®</sup> - Tylosin, **Vetmulin**<sup>®</sup> - Tiamulin & **Tilmovet**<sup>®</sup> - Tilmicosin) should be provided with proper dose to prevent mycoplasmosis and secondary infection.

Anticoccidial program should be well maintained during the summer. As a managemental practice farmer keeps birds off feed during hot period, this lowers the concentration of anticoccidial and infection may occur. To prevent coccidiosis proper anticoccidial programme with suitable molecule should be adapted.

As heat stress causes dysbacteriosis and increases chances of necrotic enteritis probiotics (**B-Act**<sup>®</sup> - *B. licheniformis*) and feed additives (**Albac**<sup>®</sup> - *Bacitracin*, **Flavomycin**<sup>®</sup> - *Flavophospholipol*, etc.) should be given to birds as a preventive measure.

To know more, please contact Huvepharma technical team



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## PRESS RELEASE

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

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

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

This event is organized to showcase such startup leaders including Unicorn (valuation of 1 billion USD) and Soonicorns in the sector. The founders invited for the online round table are, **Mr. Abhay Hanjura – Licious (Unicorn of 2021)**, **Mr. Shan Kadavil – Fresh to Home**, **Mr. Narendra Pasupathy – Nandus**, **Mr. Vignesh Soundararajan/Mr. Krishna Prasad – Delfresh (Suguna Foods)**, **Mr. Nishanth Chandran – Tendercuts**, **Dr. Sanjoy Kumar Das & Mr. Sushil Kanujolu – Fipola**, **Mr. Abhishek Negi – Eggoz**, **Mr. Mahesha – My Chicken & More**, **Mr. Harsha – The Meat Factory.**



**Dr. Mahesh P.S**

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

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

The startup leaders were posed three questions in the interactive session of the roundtable namely 1.



**Mr. Abhay Hanjura**

Their startup story, 2. Uniqueness of their business model with message for the budding entrepreneurs, 3. Expectation from the poultry sector or producers of poultry products.

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

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

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



**Mr. Shan Kadavil**

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

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

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



**Mr. Nishant Chandran**

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

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

Shan told that this category is fast growing in tier I cities with around 20 billion dollar market and overall 50 billion market in India. Dr. Mahesh asked the question of when will you stop burning or losing money, he replied that it's a social service by the beginners in the category like Abhay of Licious and Shan to create a consumer brand which requires



**Mr. Narendra Pasuparthi**

huge capital investment by way of marketing and brand building. Further he said that their startup is Ebita profitable in Delhi and Bangalore and yet to reach the revenue threshold in the newer cities which will definitely stand in some time to come.

Next in the lineup in the round table was Mr. Narendra Pasuparthi, producer cum startup from Nandus who said that “We being producers endup in a local broken supply chain not getting my price for my product. He got inspired by Madam Anuradha Desai’s words to start retailing and to build a brand is essential for getting the price for the product. After returning from US, Naren started this new venture to create a consumer brand which is “Hyper local and Omnichannel”. Presently Nandus is operating 55 outlets in Hyderabad and Bangalore. He acknowledged the vision of Sri. Kishore Hegde, who has put meat retailing on the map of India with a new outlook of shops way back in 15 to 18 years ago.

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





**Mr. Krishna Prasad**

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

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

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



**Dr. Sanjoy Das**

transform the purchase experience at shops and to convert butchers into meat experts.

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

Mr. Vignesh Soundararajan, Son of Mr. Soundararajan, Chairman and Managing Director, Suguna Foods has established a parent endorsed brand "Delfresh" in this category during last quarter of 2021. Representing delfresh, Sri. Krishna Prasad, Vice President Suguna Foods mentioned that Suguna being expert producer and processor wanted to expand as a consumer facing brand in the new ecosystem. Eventhough Suguna is having a revenue of more than 10,000 crores per year. And in his words "Just counting money and losing heavily" Past two years have been a great challenge for poultry producers with escalating costs of inputs of Corn and Soya. They have undertaken a new journey of branding 280+ stores of Suguna with Delfresh with new signage and brand identity and focusing "only offline model as of now".

To the question of supply constraints he replied that way back in 2002, Suguna started its first processing plant with 3500 birds per hour capacity with a total capacity of 6000 birds per hour then in India. However, presently the overall capacity in



**Mr. Abhishek Negi**

India is 1.4 lakh birds per hour with maximum utilization of only 70%, rest being idle because of processing alone being not lucrative.

Delfresh has chalked out greater expansion capacity with acquiring two plants in Chandigarh near Ambala and one in Belgaum. They have acquired land in Mandya near Bangalore for a Greenfield processing plant which will be ready in 15 to 16 months. They have identified five places in North, East, Andhra Pradesh, Tamilnadu to make them up and running in next 24 to 36 months. He concluded saying that "Price has to be supportive for sustainability".

Mr. Susheel Konagolu and MBA from UK, retail exporter and a third generation sea food exporter had setup brand FIPOLA (Fish – Poultry – Lamb) in 2016 to create a consumer brand in India. Representing Fipola, Dr. Sanjoy Das, Chief Operating Officer narrated their journey to start with 3 shops in Chennai with two concepts, 1. Exclusive Stores and 2. Neighbourhood stores. 9 shops in 2018, 17 in 2020, 61 stores in 2021 and targeted 100 shops by March, 2022. Fipola has a staff strength of 1,200 with 140 crore investment.

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

Mr. Abhishek Negi, IITian from Kharagpur started his venture in 2017 finding an opportunity of protein

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**Mr. Mahesha**

deficiency in India and majority of the Indian population being deficient of Vit.D and B12. They wanted to solve the problem of non-availability of quality eggs, packed eggs, graded eggs etc. All four of them IITians without knowledge in poultry setout "Do it ourself" started a 12,000 layer unit in Nalanda, Bihar to learn the entire process. They established a brand Eggoz jus to crete a brand similar to Milk of Amul, Bread of Britannia, Annapurna of ITC, Meat as in Licious and Fresh to Home.

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

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



**Mr. Harsha**

Mr. Harsha the founder of The Meat Factory established this brand along with his two friends experts in software sector. Mr. Harsha having worked in Godrej Tyson Foods for 6 years has developed the knowledge of providing safe hygienic meat for the consumer. They have setup 6 shops in Bangalore with a mission of providing quality product, hygiene environment and best price with large store space of 2600 sq.ft with a ambience for consumer experience with ice cream lounge, children play area in their shops.

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

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



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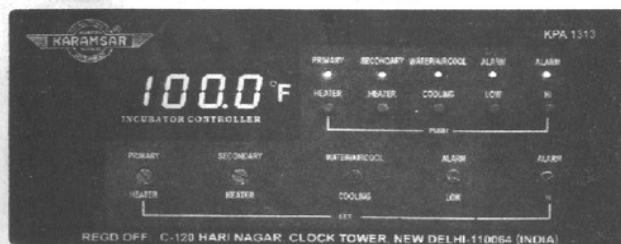
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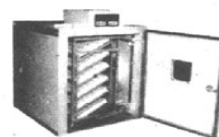
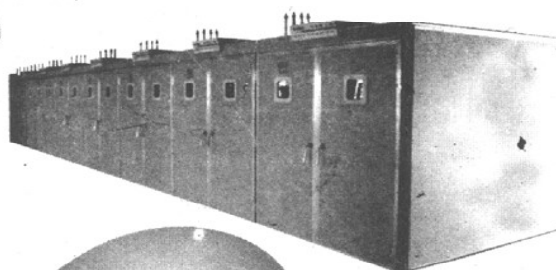
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## PRESS RELEASE

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



The webinar was moderated by Dr. Devender Hooda. On behalf of CLFMA and AICOSCA, Dr. Hooda welcomed all the speakers and the participants to the webinar. He said that, India is producing about 25%

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

CLFMA Chairman Mr. Neeraj Kumar Srivastava delivered the Opening Remarks. He thanked all the participants, industry colleagues, CLFMA Members and eminent speakers for joining the webinar, which was jointly organized



by CLFMA and AICOSCA. AICOSCA is the premier body of the Cotton Seed processing industry in the Country. CLFMA's endeavour has always been to support the members and industry associates by bringing efficiency and improving performance at farm level thus contributing to sustainable livestock farming.

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



AICOSCA Chairman Shri. Sandeep Bajoria delivered the Opening Remarks and thanked all the participants for joining the Webinar. He also thanked the Speakers, all CLFMA eminent office bearers, CLFMA Members and participants. He explained



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

**The First Speaker of the Webinar was Shri. R. D. Bohra, Hon. Treasurer, AICOSCA**, who has been associated with the cotton seed industry for the last 50 years. He gave very good insights about



**“Use of Cotton Seed Meal as a Protein Rich and Economical Feed Ingredient for Milch Cattle, Aqua and Poultry”**. He said cotton seed industry has survived due to its' large usage as fish feed.



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

He is a knowledgeable scientist in Poultry Science. Dr. S. V. Rama Rao delivered presentation on **“Cottonseed Meal in Poultry Diet” – A Potential Alternate to Soybean Meal**, which was appreciated by all. He discussed about - What is protein? what is the ideal protein source that is available? what is the practical feasibility and limitations of using cotton seed meal in poultry? and

how best we can make use of Cotton Seed Meal as a protein source in Poultry Diet. Some of the nutritional limitations of Cotton Seed Meal was also covered in his presentation. Overall it was a very informative session which was appreciated by all.



**Third Speaker of the Webinar was Dr. R. H. Balasubramanya, Retd. Principal Scientist, Central Institute for Research on Cotton Technology (CIRCOT-ICAR). He presented on the topic, 'Value Addition**

**to Cottonseed By-Products" with emphasis on "Cottonseed Meal".** He explained in detail tray culture, fermentation, separate room for storage, sterilization process, feed mixture method to be adopted by small players, etc.

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



**University, Garividi, Vizianagaram (Dist)** and he delivered a presentation on **"The Potential of Cottonseed Meal as Cattle Feed Ingredient"** in detail. He presented that, Cotton is the fourth largest oil crop in the world after soybean, rapeseed and oil palm and India is the largest cotton producer in the world followed by China and USA. He presented the state-wise area production, productivity of cotton seed, major trading centre of cotton seed in India and explained in detail cotton seed meal, production status in India, advantages of cotton seed meal, it's



nutritive value in detail, nutrient composition and its by products from the cotton seed crushing, proximate principle and gossypol of Cotton Seed Meal(CSM) in comparison with Soybean Meal(SBM), mineral profile of CSM in comparison with SBM, Amino Acid Profile of CSM in comparison with SBM, Proximate principles and gossypol of cotton seed meal in comparison with cotton seed cake and he insisted that, CSM is a cheaper source of protein. He also discussed the comparisons of Cotton seed meal v/s other cotton seed by products, etc.

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

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



The Webinar was in association with AICOSCA was appreciated by the participants. Almost 242 registered for the said Webinar and 131 participants attended the Webinar.

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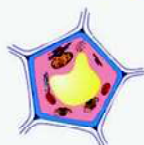




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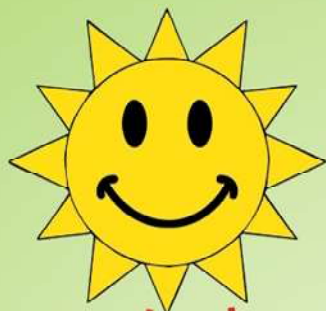
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**Zoetis** is a global animal health company driven by a singular purpose to nurture our world and humankind in advancing care in animals. We stand by our customers and their businesses by providing solutions across the continuum of care to predict, prevent, detect and treat diseases. The company develops and manufactures animal-health medicines and vaccines for companion animals, dairy, and poultry.

**Zoetis** provides Vaccines, Anti-Infectives, Disinfectants, Embrex biodevices, MFA, Anticoccidials and Toxin Binders. Today, the company has over 300 product lines globally, operating in more than 100 countries.

**Zoetis India** is dedicated to deliver quality products for the health of Animals. The Indian poultry market size reached a value of \$ 24 billion in 2021. The industry is further expected to grow at a CAGR of 8.1% in the forecast period of 2022-2027 and to reach a value of approximately \$ 40 billion by 2027. Every industry has its own challenges for growing further. Currently Mycoplasma and E. Coli are the major issues which are bothering the industry most and farmers are losing their profits because of unprecedented level of Mycoplasma and E. Coli in the farm. There are multiple options available in market to tackle these issues, but somehow the farmers are not very happy with current solutions.

Poultry division is an integral part of **Zoetis India**. Since several decades **Zoetis** (earlier Pfizer) has provided several solution against various health issues in the form of vaccines, MFA's (medicated feed additives), Parasitocides and Anti-infective. The trust that has been bestowed by farmers that a product coming from **Zoetis** will be the best in class and will positively impact the bird's performance. Considering this scenario and to address the issues **Zoetis India** launched **LINCO-SPECTIN® 100** on 3rd March 2022. **LINCO-SPECTIN® 100** is introduced under Anti-infective range and has specific action against CRD (Chronic Respiratory Diseases), CCRD (Complicated Chronic Respiratory Diseases) and Colibacillosis.

We are the 1<sup>st</sup> to launch it...



## LINCO-SPECTIN® 100

**A New Approach Towards Prevention of Challenging Mycoplasma Spp. (*M. gallisepticum* and *M. synoviae*) and *E. coli***

**LINCO-SPECTIN® 100** launch was the first virtual launch by **Zoetis India Poultry team**. The launch was attended by 168 participant. Launch started with a welcome note by Dr Sandip Joshi (Business Unit Director – Poultry) and Ganesh Vandana. Mr. Hari Prasad (GM – India & BNS) gave opening remarks where he spoke about the Industry and current solutions required for industry. Dr. Arkhom Cheewakriengkrai (Vice president Southeast Asia, India, and distribution North Asia) gave inaugural speech where he expressed his views about care for animal and mankind, customer obsession and how **Zoetis** works for solution providing approach keeping customers' requirements as priority. With small AV the Pack shot of **LINCO-SPECTIN® 100** was unveiled.

Dr. Bhushan Gangurde (GPM – Poultry) introduced the speakers to the participant. We had two eminent speakers for the launch presentation on **LINCO-SPECTIN® 100**. First speaker was Dr Anupam Kr. Srivastav

(National Technical Manager – **Zoetis India & BNS**) who discussed the current challenges in industry, and also presented, how current market is affected by Mycoplasma spp. and E. coli. After sharing all the important market scenario, we have asked our next Speaker Dr. Dieter Vancraeynest (Senior Director Global Commercial Development – Zoetis Inc.) to speak upon **LINCO-SPECTIN® 100** most effective Anti-infective against Mycoplasma

spp. and E. coli. Dr. Dieter highlighted unique features of **LINCO-SPECTIN® 100**, mode of action, dosage, and administration. Both speakers shared lot of data on **LINCO-SPECTIN® 100** and its effectiveness against both M. gallisepticum and M. Synoviae along with E. coli. The data suggested that the combination Lincomycin and Spectinomycin is much more beneficial compared to other molecule available in market. The **LINCO-SPECTIN® 100** has a shelf life of 5 years. **Zoetis India** also recommended use of **LINCO-SPECTIN® 100**. as cleanup/flushing program before use of Mycoplasma Vaccine Vaxsafe® MG and Vaxsafe® MS.

**Zoetis India** is very much confident that **LINCO-SPECTIN® 100** along with Vaxsafe® MG and Vaxsafe® MS is definitely new approach towards challenging Mycoplasma spp. and E. coli and this will provide the real peace of mind for the poultry farmers.

For more details on **LINCO-SPECTIN® 100** please contact Zoetis field colleagues



**zoetis**

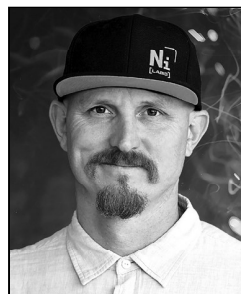
## The Alltech ONE Conference (ONE) returns May 22-24 to Lexington, Kentucky

ONE also offers virtual options

*Keynote speakers include Mick Ebeling and Paul Polman, renowned for unleashing the power of innovation and leadership for societal benefit*



**The Alltech ONE Conference (ONE) returns  
May 22-24 to Lexington, Kentucky.**



**Mick Ebeling** is a keynote speaker at the Alltech ONE Conference (ONE), which takes place May 22-24, 2022, in Lexington, Kentucky.



**Paul Polman** is a keynote speaker at the Alltech ONE Conference (ONE), which takes place May 22-24, 2022, in Lexington, Kentucky.

[LEXINGTON, Ky.] –In fewer than 100 days, the **Alltech ONE Conference (ONE)** will return to Lexington, Kentucky, for a collaborative exploration of the challenges and opportunities in the agri-food industry and beyond. Alltech, a global leader in animal health and nutrition, announced that their 38<sup>th</sup> annual flagship event will be held May 22-24 both in person and virtually on a first-class platform, with live-streaming and on-demand presentations available to ensure accessibility to everyone, everywhere.

Reflecting the most relevant topics impacting the agri-food industry, the key themes of the discussions held at ONE will include science, sustainability and storytelling.

“The opportunities are abundant for the global agri-food sector to shape the future of our planet,” said Dr. Mark Lyons, president and CEO of Alltech. “We can deliver nutrition for all, while fuelling economic vitality and replenishing our Earth’s resources. The potential for impact is profound, but it requires a

higher level of commitment and collaboration from every one of us. ONE is much more than a gathering; it is an invitation to step forward and share in a vision of promise for our ONE planet.”

ONE attendees will derive inspiration from keynote speakers who have unleashed the power of innovation and courageous leadership for positive impact.

**Mick Ebeling**, founder and CEO of Not Impossible Labs and author of “Not Impossible: The Art and Joy of Doing What Couldn’t Be Done,” will take the ONE mainstage in person, and his presentation will also be live-streamed for those joining virtually.

Ebeling was recently named by Fortune Magazine as one of the Top 50 World’s Greatest Leaders. He is a recipient of the Muhammad Ali Humanitarian of the Year Award and is listed as one of the world’s most influential creative people by The Creativity 50s. Ebeling has sparked a movement of pragmatic, inspirational innovation, and as a career producer



and filmmaker, he harvests the power of technology and storytelling to change the world.

Presenting virtually is **Paul Polman**, who has been described by the Financial Times as “a standout CEO of the past decade”. As CEO of Unilever (2009-2019), he stopped reporting quarterly earnings to focus on a long-term strategy that would successfully double revenues while reducing the company’s environmental impact by half.

Prior to joining Unilever, Polman served as CFO and vice president for the Americas at Nestlé and as president for Western Europe at Procter & Gamble. He was a member of the UN Secretary General’s High-Level Panel, which developed the Sustainable Development Goals and which he continues to champion, working with global organizations to push the 2030 development agenda.

Paul’s new book, “Net Positive,” is a call to arms to courageous business leaders, outlining how to build net-positive companies that profit by fixing the world’s problems rather than creating them. He serves as the chair of IMAGINE — a social venture dedicated to systems change — and of the Saïd Business School. He is vice-chair of the UN Global Compact and is a B Team leader and honorary chair of the International Chamber of Commerce, which he led for two years.

While the world-class keynote speakers at ONE will offer universally valuable insights, the subject- and species-specific tracks will explore emerging opportunities in aquaculture, beef, crop science, dairy, pig, poultry, equine, health and wellness, business, and brewing and distilling. Confirmed speakers are currently listed on the ONE website, with more to be added.

Virtual attendees of ONE will have access to live-streamed keynotes and pre-recorded track presentations that can be viewed on-demand. For in-person attendees, the ONE experience will extend into beautiful downtown Lexington, Kentucky, with special events, dinners and tours.

To learn more about the Alltech ONE Conference, including how to register, visit [one.alltech.com](https://one.alltech.com). Join

the conversation across social media with #AlltechONE.

Since 1985, Alltech’s annual conference has drawn leaders, innovators and changemakers within agriculture to Lexington, Kentucky. In 2020, Alltech reimagined the event in a virtual format to ensure that its ideas and inspiration could reach everyone, everywhere. Last year, the virtual event drew more than 10,000 people, including over 400 media, from 101 countries.

**-Ends-**

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#### **About Alltech:**

Founded in 1980 by Irish entrepreneur and scientist Dr. Pearse Lyons, Alltech delivers smarter, more sustainable solutions for agriculture. Our products improve the health and performance of plants and animals, resulting in better nutrition for consumers and a decreased environmental impact.

We are a global leader in the animal health industry, producing specialty ingredients, premix supplements, feed and complete feed. Strengthened by more than 40 years of scientific research, we carry forward a legacy of innovation and a unique culture that views challenges through an entrepreneurial lens.

Our more than 5,000 talented team members worldwide share our vision for a Planet of Plenty™. We believe agriculture has the greatest potential to shape the future of our planet, but it will take all of us working together, led by science, technology and a shared will to make a difference.

Alltech is a private, family-owned company, which allows us to adapt quickly to our customers’ needs and maintain focus on advanced innovation. Headquartered just outside of Lexington, Kentucky, USA, Alltech has a strong presence in all regions of the world. For more information, visit [alltech.com](https://alltech.com), or join the conversation on [Facebook](#), [Twitter](#) and [LinkedIn](#).

## PRESS RELEASE

# Indian Poultry Leader Suguna Foods Announces Management Rejig; Elevates Vignesh Soundararajan as its new Managing Director



Mr. Vignesh Soundararajan

*Agro-Food industry. The industry has also played a significant role in building a healthy and strong population. The foundation on which Suguna's legacy has been built and we are confident that Vignesh as the new Managing Director will continue this momentum which will benefit the farmers, industry, customers, partners and people."*

**Adding to this, Mr. Vignesh Soundararajan, Managing Director, Suguna Foods said,**

**Mumbai 21<sup>st</sup>, March 2022: Suguna Foods, India's largest poultry conglomerate, today announced the appointment of Mr. Vignesh Soundararajan as its new Managing Director effective from April 1st, 2022.** In his new role will lead the Farm, Feed & Process Food Division of Suguna Foods operations in India. In addition to this, Vignesh will also power the company's expansion within the poultry segment and focus on strengthening the footprints of the brand across the nation. The current Managing Director and co-founder Mr.G.B Sundararajan will continue to be associated with Suguna Foods as part of the Board.

Commenting on this **Mr. Soundararajan, Chairman, Suguna Group** said, *"Sundararajan and I are truly satisfied with the transformation we have brought to the poultry industry through Suguna and how we have empowered farmers across the nation. From backyard farming to integrated growers' poultry industry has come a long way in being a significant contributor to the*

*"The last seven years have been very eventful, from facing the global pandemic to rebranding Suguna Foods, we have faced the highs and lows of the industry. As a market leader and name which resonates across all geographic locations, Suguna Chicken has always been the favorite among consumers. We have also launched "Delfrez" the new age brand in meat retail, which has further strengthened our product portfolio adding diverse purchase options to consumers. While we are devoted to continuing Suguna Foods' legacy and strengthening its overall commitment to the people and nation, I am personally looking forward to bringing additional innovations and retail expansion across all operations in my new role. As we move towards a brighter tomorrow, I look forward to creating a mutually beneficial future for each of our betterment. With this in mind, we have placed a high value on our farmers and Business Associates, and we will continue to work hard to provide best - quality products for our consumers".*

Mr. Vignesh Soundararajan holds an MBA degree from IESE BUSINESS SCHOOL, Barcelona, Spain, Bcom from Christ University and an Advanced Diploma in Management Accounting - Chartered Institute of Management Accountants (CIMA) – London, UK. In 2013, he joined Suguna Foods as a Management Trainee and now has risen to the level of the Managing Director of Suguna Foods. With a Close to a decade of experience, he has trained extensively in many domains and has gained a solid understanding of all the business functionalities. As part of his current role - Executive Director, Mr. Vignesh launched Delfrez, Suguna Foods' retail division, which catapulted the retail segment in South India. Mr. Vignesh contributed to the company's transformation by fostering innovation, bridging technology and positioning the brand to have a stronger consumer impact.

**About Suguna Foods:** Suguna is one of the top ten poultry companies in the world, operating in 18

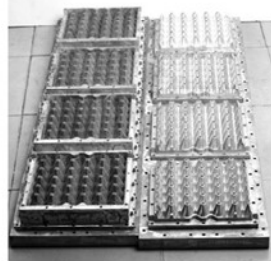
states in India and offering a wide range of poultry products and services. Our service ranges from broiler farming, hatcheries, feed mills, processing plants, animal healthcare products are all part of the fully integrated operations. Suguna product portfolio includes animal & poultry feeds broiler chicken, processed chicken, and value-added eggs. Suguna under its retail segment has launched "Delfrez" – The modern meat retail outlets which provide customers with fresh, safe, and hygienic chicken. As hygiene plays an important role in the retail segment, utmost care has been taken safety and hygiene of the store. The store caters the freshest chicken processed from our plant in all categories.

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**S.S. PACKAGINGS**

**Mfrs.:**  
**Corrugated Boxes,**  
**Cores Pulp trays, Coir**



**SRI LAKSHMI  
 PACKAGING COMPANY**

**Mfrs.:**  
**Corrugated Chick Boxes &**  
**Hatching Egg Box**  
**Paper Pulp trays, Coconut Coir**



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## Hartmann India Ltd – Product Launch



**Lighting Lamp by esteemed customers**

Hartmann is the world's leading manufacturer of moulded-fibre egg packaging, a market-leading manufacturer of fruit packaging in South America and one of the world's largest manufacturers of technology for the production of moulded-fibre packaging. Founded in 1917, Hartmann is headquartered in Gentofte, Denmark.

Our unique market position and capabilities render Hartmann relatively resilient to economic fluctuations, allowing us to leverage a number of attractive market drivers, including increasing global demand for eggs and fruit, rising environmental awareness and a growing focus on health and nutrition.

In 2020, Mohan Fibre Pvt Ltd, Chandigarh a 43 year old company with biggest production facility

in India has been acquired by Brodrene Hartmann A/S, a leading specialist in moulded fibre packaging with more than a century of experience and knowledge.

This acquisition establishes a solid platform for Hartmann in the attractive Indian market, which is characterized by a favorable demographic development and increasing egg and fruit production. The combination of population growth and rising urbanization in the coming years forms a solid foundation for continued development of the retail industry and increasing demand for quality egg packaging in India. In addition, the penetration of moulded-fibre packaging for protection of fruit is expected to increase as supply chains are professionalized.



**Product Launch by esteemed customers**



**Hartmann India, MD – Mr Himanshu Mahaur,  
sharing his views**

Since acquisition in last one year Hartmann India team was working with their global technical team to establish new 30 egg trays as per Indian Layer farmers & Egg traders need, suitable for long distance egg transportation, High strength & flexibility for rough handling @ various points, High water repellency or moisture resistant & best suitable pockets for all sizes of Eggs.

#### **Focus on sustainability, innovation, and customer service**

Hartmann's Indian team co-developed a new egg-trays for 30 eggs (Medium & Large size). Using an existing new product as a base for development, they made it better suited for the specific needs in India. Within the project, our team also came up with a new raw material recipe. All this was created in close co-operation with a key customer in India and within the Hartmann global team.

India is the #3 market in egg production, and growing YOY with CAGR 7%. on. According to



**Dr Mahendra & Jaspreet,  
Interacting with Customers**



**Hartmann India, General Manager -  
Dr Mahendra Deshpande, sharing his views**

Animal Husbandry Dept of Govt of India, in 2020 the per capita egg consumption in India was 79 units & which is growing by 10% every year. Despite of the strong growth, Indian consumption is still relatively low compared to other countries. According to National Institute of Nutrition recommendation In India per capita egg consumption need to reach 180 unit asap.

#### **Customer Need & Market requirement -**

- When analyzing our offering and listening to our customers we saw that we could improve our egg trays. We set to reach better efficiency on the customers graders, less egg breakage during long transportation on uneven roads and suitable for extreme humidity. The HIL team started a new product development project with the aim of creating a better and stronger egg-tray for India, taking the new egg tray from Hartmann global as a starting point.



**Interaction with Valued Customers**



**Valued Customers**

### **Co-creation with a key customer kicked off –**

The Hartmann team has an ongoing customer intimacy program, and we invited a key customer to contribute to the egg-tray development. This project was one more way of increasing co-operation, but it also ensured that the new solution would work in the real-life production and transportation.

As the machinery used to make the tray Hartmann worldwide is quite different from ours, we could not simply copy and paste. We developed new adapted tooling for our machines and started to work on the recipe too for the new egg-tray for the more humid conditions in India.

### **New raw material recipe developed -**

The Production & Quality team needed to develop a new recipe for the raw material for another reason as well.

- Recycled newspaper, magazine and cardboard are the key components in our fiber recipe. For us



**Valued Customers**

digitalization creates a new challenge: in the future there will not be as much recycled paper available as our production requires. We thought that this was a good opportunity to test other alternatives. The new material was to be stronger, humidity resisting and available in the future.

The new future-looking raw material recipe has now been developed and implemented.

### **Real life tests conducted in transportation and production**

When the first new egg-trays, HIL Medium & Large produced in India, - We placed the egg-trays at the back of the truck, where the load shakes more and where we typically see more broken eggs.

The trucks drove routes that varied from 600 to 1200 kilometers. The new prototype egg-tray showed



**Valued Customers**

excellent results across the transportation tests: the breakage was 50% less than before.

### **Quality monitoring, improvement and innovation continues**

The whole project took less than a year to complete and roll-out.

- Our team visit our customers to get regular feedback on the HIL Medium & Large tray.

An important part of the feedback loop are the visits to local Egg Traders, where the sales team checked how the egg-trays perform during storage, packaging & transportation.

### **New Tray Launching :-**

In back to back event on 25<sup>th</sup> & 27<sup>th</sup> February 2022, Hartmann India Ltd Launched their New trays "HIL-



Medium" & " HIL-Large" @ Hotel Golden Tulip, Panchkula, Haryana.

More than 100 Layer Farmers from Barawala & More than 35 Egg traders of Barwala Egg trader association attended this event.

Event started with Lighting lamp & Ganesh Vandana, followed by recorded message from Global CEO Mr Torben Rosenkrantz-Theil who explained who we are & what we are doing globally . At Hartmann, we are committed to making sustainable egg packaging exclusively based on biodegradable moulded fibre that can be recycled or disposed of with a minimal impact on our surroundings. Our definition of sustainability also reaches out to other areas including forest stewardship, the climate, our employees and supplies, and our investors.

After that Mr Ernesto Schonbrod, President for Asia & America shared his views through recorded message only. He said Egg lowest cost available Nutritious product & per capita egg consumption is increasing very fast in Asian countries specially in India. There fore strategy of Hartmann is become a leader in Moulded fibre packaging for Eggs & Fruit in India. Our priority will be always consistent quality with best services as per need of local customers always respecting the Indian way.

Then Mr Himanshu Mahaur, MD of Hartmann India Ltd talked about Mission & vision of HIL . Hartmann mission is and will be always to find solutions to complex problems of our customers in most

sustainable way thereby helping environment as well in doing our bit- Customer Focused, Helping community in area we are operating in. Our aim is to Safe, Secure Eggs in Sustainable packaging .

Dr Mahendra Deshpande , General Manager-Sales given corporate overview of Global Group - Hartmann , Its History , growth & development in last 104 years . He also explained importance of sustainability & protection of environment are integral part of Hartmann business model . Hartmann is working closely with our customers to accommodate demand for sustainable products in the retail industry,Hartmann was the first manufacturer to offer both FSC®-certified and CO2-neutral retail packaging.

Mr Sompal Tanwar & his team given overview about Hartmann's SCM practices , Production process & Stringent quality parameters & customer infield service & support.

Product Launch was done by our Valued customers available on respective day.

Dr Mahendra & Mr Jaspreet Singh presented & described new product's uniqueness & technical specifications. Also had interaction with customers about their queries.

Many customers shared positive feed about consistency in Hartmann Products , Prompt services by Hartmann Team, Regular availability of Trays which will be continue in future also.

Finally Mr Jaspreet Singh given vote of thanks to all attendees & event got over after cocktail dinner !



**Team – Hartmann India Ltd**

# NATIONAL EGG CO-ORDINATION COMMITTEE

DAILY / MONTHLY EGG PRICES DECLARED BY NECC AND PREVAILING PRICES AT VARIOUS PRODUCTION CENTRES (PC) AND CONSUMPTION CENTERS (CC) MARCH 2022

Name Of Zone / Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average	
NECC SUGGESTED EGG PRICES																																	
Ahmedabad	400	400	400	400	400	410	410	390	390	392	395	397	402	405	410	412	415	415	420	425	430	430	433	436	436	436	436	436	400	400	400	411.65	
Ajmer	341	341	341	341	341	341	343	343	343	355	355	358	363	366	369	369	369	369	369	371	372	372	365	350	350	350	345	345	335	331	351	-	353.47
Barwala	351	351	351	351	351	351	351	351	351	357	357	360	363	366	369	371	371	371	371	371	374	376	376	376	357	350	350	333	333	333	-	357.43	
Bengaluru (CC)	390	390	390	390	390	390	390	390	370	370	380	385	385	390	390	390	390	395	395	400	405	410	415	420	420	420	420	420	420	410	-	396.67	
Brahmapur (OD)	375	375	375	375	375	375	380	380	380	380	380	380	382	382	384	386	389	392	395	398	400	404	406	406	406	406	406	406	386	376	376	387.61	
Chennai (CC)	410	410	410	410	410	410	410	390	390	390	390	390	395	395	400	400	400	405	415	415	425	425	425	435	435	440	440	440	440	440	440	412.74	
Chittoor	403	403	403	403	403	403	403	383	383	383	383	383	388	388	393	393	393	398	398	408	418	418	428	428	433	433	433	433	433	433	433	405.74	
Delhi (CC)	370	370	370	370	370	370	365	365	365	365	377	377	385	390	390	390	390	390	390	390	390	395	395	395	380	375	375	360	360	350	377.39		
E.Godavari	355	355	355	355	355	355	360	360	360	355	358	361	364	367	370	373	376	379	382	385	388	390	392	394	394	394	394	394	375	365	365	372.87	
Hyderabad	340	340	340	340	340	350	355	355	355	355	363	363	363	363	363	367	367	367	367	374	376	376	376	366	366	366	366	366	346	346	335	356.43	
Ludhiana	348	348	348	348	348	348	348	348	348	348	358	358	361	363	367	367	367	367	367	374	376	376	376	366	366	366	366	366	347	447	447	420.26	
Mumbai (CC)	405	405	405	405	405	415	415	400	400	400	405	410	410	415	415	420	420	420	425	430	435	440	445	447	447	447	447	447	435	425	415	412.23	
Muzaffarpur (CC)	400	400	400	400	400	400	400	400	400	405	410	410	414	414	419	424	424	424	424	424	433	433	433	433	419	419	410	405	400	390	-	399.81	
Mysuru	395	395	395	395	395	395	390	370	370	370	380	385	390	390	390	390	390	393	398	398	403	410	415	420	425	425	425	425	425	412	400	383.13	
Nagpur	370	370	370	360	360	360	360	360	360	360	360	380	380	380	390	390	390	390	390	390	397	397	410	410	410	410	410	410	390	380	370	-	384.84
Namakkal	380	380	380	380	380	380	360	360	360	365	365	370	370	375	375	380	380	385	385	395	395	395	405	410	410	410	410	410	410	410	410	408.87	
Patna	400	395	395	395	395	400	395	395	400	395	405	407	410	414	414	419	419	419	419	419	429	429	429	429	419	419	419	405	405	390	-	411.8	
Pune	395	395	395	395	400	400	390	390	390	392	395	398	401	404	407	410	413	416	419	422	425	428	431	434	437	439	439	439	430	420	-	416.53	
Ranchi (CC)	410	405	405	405	405	405	405	405	405	410	414	414	414	419	419	424	424	424	424	424	433	433	437	437	429	429	419	414	405	400	-	375.45	
Vijayawada	365	365	365	365	365	370	370	370	355	358	361	364	367	370	373	376	379	382	385	388	390	392	394	394	394	394	394	394	375	365	365	387.03	
Vizag	375	375	375	375	375	375	375	375	375	375	375	375	378	380	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	380	380	372.87	
W.Godavari	355	355	355	355	355	360	360	360	360	355	358	361	364	367	370	373	376	379	382	385	388	390	392	394	394	394	394	394	375	365	365	372.87	
Warangal	342	342	342	344	354	359	340	340	342	345	348	351	354	357	360	363	366	369	372	375	378	381	384	387	389	389	389	373	363	352	-	361.67	
Prevailing Prices																																	
Allahabad (CC)	390	381	381	381	371	381	381	381	381	386	390	390	390	390	390	400	405	405	414	414	414	414	414	414	410	405	395	390	390	381	-	394	
Bhopal	370	350	345	345	345	355	355	355	355	360	365	365	375	375	375	375	375	375	390	390	390	390	395	395	365	365	365	365	365	-	366		
Hospet	350	350	350	350	350	350	350	330	330	330	340	345	345	350	350	350	355	355	360	365	370	375	380	380	380	380	380	380	370	-	356.67		
Indore (CC)	375	370	360	345	350	350	360	360	360	360	370	375	375	375	390	395	390	390	400	400	400	400	400	400	380	365	355	355	350	-	373.5		
Jabalpur	364	360	345	348	348	353	356	356	345	352	362	364	368	368	370	375	378	385	388	388	388	388	380	380	380	365	365	365	365	-	367.8		
Kanpur (CC)	381	381	381	371	371	371	371	371	371	390	390	390	390	400	400	400	400	400	400	400	400	400	400	400	400	400	400	386	386	371	371	-	388.43
Kolkata (WB)	440	440	425	425	425	425	425	425	425	428	430	433	438	440	442	445	447	450	452	452	455	455	455	455	455	455	455	455	433	420	420	439.26	
Luknow (CC)	868	403	403	403	400	400	400	400	400	400	410	410	410	410	417	417	417	417	417	417	423	423	423	423	417	417	417	417	413	403	-	426.8	
Raipur	360	360	360	360	360	360	365	365	365	365	370	375	375	375	375	380	380	380	380	392	392	392	395	392	394	370	370	370	355	355	-	372.9	
Surat	400	400	400	400	400	405	405	400	400	400	400	400	405	410	415	415	420	415	425	430	435	440	445	447	447	447	447	447	410	410	410	416.71	
Varanasi (CC)	417	406	406	406	397	406	406	406	406	413	420	420	430	430	430	430	433	433	433	440	440	440	440	440	440	440	440	440	400	400	-	417.93	

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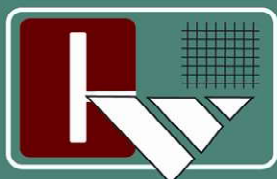
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- B. Other Ades-50%
- 1 - Heat regulator
- 2 - Aspirin
- 3 - Chromium
- 4 - Betaine
- 5 - Energiser
- 6 - Electrolyte-SDHP, DSHP, Ca Gluconate, Mg sulphate, Ca hypo phosphate, Ca Lactate etc
- 7 - Minerals
- 8 - Immune boosters

## ■ Product Pack :

500 Gm Pouch

## ■ Pack/Carton Size :

500 Gm \* 35

## ■ USP :

- **Unique & Leading** formulation since last 20+ yrs
- Work better for **Stress and Stroke** ( Hot, Cold & Other Stress )
- Power pack blend of **Vit.C 50% and 26+** Ingredient mainly **Heat Regulator, Aspirin, Chromium, Betaine, Minerals, Immune Booster** etc.
- With Special Technology **Vit C coated with Energiser** to prolong Vit C degradation & insta energy source
- **Special Value added agents** helps to protect from stroke in peak heat after 2/3 pm.
- **Balanced Electrolyte** and **Osmoregulation**.
- **Achieving Hormonal Balance** to combat stress
- **Quick Relief** to birds
- **Effective** than individual uses of Vit.C & other concern supplements etc.
- **Addition** of of essential amino acids will help to maintain body weight in stress
- **Value for money**

## ■ Dose :

**WATER** - 15 gm/ till 1kg B.Wt for 1000 birds & then after 1 gm/ 100 gm B.Wt

**FEED** - 200 gm/MT

## ■ Mode of Administration :

**Water** - Give total calculated dose (as per flock size) in morning drinking water (before 1 hour start of heat) as drinker/vaccine dose and complete medicated water in 1-2 hrs. Only concentrate dosing. Do not give total calculated dose through maximum water or diluted form

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- **Coated Vitamin C content 125000 mg** per kg & 25000 mg as per inclusion dose
- **Vitamin C** supplementation complements chromium uptake & stress management
- Added **Black Cumin** seed powder support as immunity booster
- Using **Zeolyte** as a best carrier instead of calcium carbonate
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- **Maintaining Appropriate levels of Chromiate C** in feed (800 ppm) shows significant growth in performances
- Original Product Pack from USA Manufacturing unit.
- **Value to money**

#### Guaranteed Analysis:

Chromium Propionate 4000 mg per kg  
Coated Vitamin C 1,25,000 mg per kg

#### Ingredients:

Chromium Propionate, Coated Vitamin C, Black Cumin Powder and Zeolyte

#### Feeding Directions:

**Poultry** : 200 grams per ton of feed  
**Dairy** : 300 grams per ton of feed  
Each dose (200 grams) of Chromiate provides 800 mg of Chromium Propionate and 25,000 mg of Coated Vitamin C.

#### Packing:

25 Kg Bag



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### Modus Operandi

- ◉ Work on dual concept of **Growth & Defence**
- ◉ Helps to maintain additional requirement of nutrients
- ◉ Active ingredients, maintain vital organs growth & bone strength
- ◉ Helps to increase RBC's count in blood
- ◉ Activate immune system as per need and protect birds from pathogens
- ◉ Special Phytochemical & Essential Oil extracts helps to build immunity & combat infections
- ◉ Probiotics helps to maintain GIT and Eubiosis

### USP :

- ✓ **New & Unique Formulation**
- ✓ Two way action **Growth & Defence**
- ✓ **Water Soluble** powder with non sticky and no sediments in water tank and channels.
- ✓ **Complete Package** Effective combination of: Growth Promoter + Amino Acids + Liver Tonic + Haematinics + Bone Tonic + Probiotics + Nutritional Booster + Special Herbs + Essential Oils Extracts + Stress Relievers & Other Performances Boosters
- ✓ **Replacement** of same category product is feasible looking to flock status & management
- ✓ **Proven Results.**
- ✓ **Highly Bioavailable** forms of ingredients (IP Grade)
- ✓ **Stabilised** formulation
- ✓ **Provide wide protection** to birds as preventive and curative therapy
- ✓ **Extra strengthening** of vital organs and body structure
- ✓ **Cost effective** formulation.

### Dose :

#### a) Water

- Poultry :** • 5 -10 gm/1000 Chicks  
• 25-50 gm/1000 Kg B.Wt.
- Swine :** • 5-10 gm/10 piglets  
• 5-10 gm/pig/day

#### b) Feed - 200 gm / MT

Or As Recommended by Technician

### Directions for use :

Calculate total requirement of flock and administer all quantity in drinker as like vaccines dose (drinker dose)

### Usage :

recommended as: 5 days in 1st week and then after 2 days every alternative week or during stress condition or any treatment/vaccine course

- **Product Pack:** 50gm & 200gm Packet
- **Carton Size:** 50gm x150 & 200gm x 50

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# Use of Artificial Intelligence in Poultry production

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**Abstract:** Artificial Intelligence is considered as an important tool of computer application and it involves the use of programming languages and coding softwares. In recent times its use has diversified in many fields. Human being has constantly influenced by the evolution of recent technologies to analyse data and make decisions as and when required. Use of artificial intelligence has also marked its impact on livestock farming. Poultry industry also can be boosted up by using technologies for increasing its efficiency, improve performance and thereby result in improvement in the economy.

## Introduction:

Over the recent times, with the increment in poultry production, technological advancements have also been absorbed into poultry farming. Technology in poultry farming is the process of domesticating birds by use of advanced methods of farming that utilizes modern tools, equipment and simulators. The use of technology in poultry farming is to maximize potential for meat, eggs, and to gain more profit. Many improved technologies such as Artificial Intelligence (AI), Internet of Things (IOT), Drones, Sensors devices and Mobile Apps etc. were developed to aid effective poultry production (Adetomiwa, 2020)

One of the most commonly adopted technologies is the use of artificial intelligence in poultry production and has led to improvements in the income generation process from poultry farming. Many challenges associated in poultry industry have been addressed by use of Artificial Intelligence. Human involvement in farm can act as a source of infection where in machines and robotics can reduce this chance of spreading any infection within

the farm premises. Artificial Intelligence is considered as integral part of computer science and can very well reduce the error, improve efficiency of farming and maximize profit of a farm. It is a widely used tool that enables to assimilate data, analyse it to improve decision-making process thus improving its efficiency. Following are the few areas where Artificial Intelligence has marked its scope in poultry industry.

## Farm Routine Management

Farm Management practices involve huge amount of data of routine works and are collected and stored in computers. These data serve as very effective tool for smooth running of the farm, timely disease diagnosis and can take appropriate steps in prevention from further spread of the disease. Various parameters like humidity, temperature, light, ammonia levels inside the farm etc. are being collected and are stored in form of excel. Artificial Intelligence can process the data with the help of Data Analysis and can also make instant decision making thereby improving efficiency of the farm activities. Robots are programmed to perform tasks like collecting data related to temperature, humidity, air pressure, ammonia level etc. and allow the machines to take appropriate decisions which are mostly related to ventilation of the farm and work accordingly as programmed. Use of drones has been considered a better option for extensive system of farming where birds are allowed to let loose and roam freely.

AI will help to monitor these outdoor activities of the farms which sometime become very tedious task for humans to accomplish in time and maintain records. Zigbee and Raspberry Pi are some of the



recent technologies developed with wireless sensors and GPRS and these will soon be introduced in poultry industry. Many other farm activities such as feeding and watering of birds, sanitization of farm equipments and farm premises etc. can also be performed well with the use of artificial intelligence. Data of various parameters can be collected and analysed on daily basis for any future projection. One can easily project the weight of the birds prior hand and production can also be estimated. Thus these kinds of technologies help to take appropriate decisions and can be act fast.



**Fig: Robots in action**

Cheroen Pokland Group one of the Thailand's largest private companies described the use of "nanny robots" to alarm about the potential outbreak of diseases in farms to farmers and also report the ideal time to supply feeds (Loyon et al. 2016).

### **AI use in hatchery**

Technologies have been developed for determining egg quality. De Ketelaere, et al. (2004) reviewed about various machineries and techniques to address about a range of egg and egg quality related problems. As large number of hatching eggs are produced every year, and their potential impact on poultry industry, it is important to develop an accurate and fast system for detecting egg defects. The hatchery is one of the most important segments of the poultry industry, and this create

an abundance of data during the process critical information such as internal temperature, humidity, oxygen carbon dioxide concentration essential for chicks production. The first few hours are very critical for the production of chicks in the hatchery. Chicks required appropriate condition to strive during peeping and hatching. Through appropriate programming these parameters could be maintained and thereby improves the hatchability rates of the batch. Drones are used to collect images and determine the hatchability rates and also determine any signs of diseases in the hatchlings. In large commercial hatcheries, AI is utilised in determination of sex which seems a tedious work when done manually. Robots are invented and controlled by computer softwares are also used in cleaning and disinfecting procedures the hatcheries.



**Fig: Drones in use in farm premises**

### **Disease Management**

Early disease diagnosis and prompt action and management are the most important part of poultry production practises. Disease management is a complex process and with the use of machine and AI Technologies can simplify and assist in diagnosing the process knowing the variation in symptoms and number of diseases. Symptoms like cannibalism, limping, drooping of head, pasty vent, huddling can be very easily identified with the help of cameras installed in the farm premises and can be send immediately to the concern authorities for

confirmation and prompt action could be taken to reduce any loss. Different kinds of voices and behavioural changes in the birds can be identified through cameras and accordingly programmed in such a way that it can send alarm to the farm managers or veterinarian in charge of the farm. Changes in the behavioural patterns like feeding, drinking water, huddling etc within the birds can be monitored easily and within few minutes concerned veterinarian can do confirmatory diagnosis of the disease merely with the help of mobile phone application even without his/her presence in the farm. Birds suffering from any nutritional deficiencies may show typical symptoms can be detected early thus helpful in carrying out early treatment to avoid any loss.

Roberts et al. 2019 elaborated about an experiment was conducted at Oxford University in 2012 known as “Chicken Time Warp” showed that collective motion of bird flock can help identification of disease quite in advance like few weeks before it starts showing any disease symptoms. This prediction can help to counteract many deadly diseases and its related losses incurred by farmers. Marian Dawkins, an animal behaviourist from Oxford and his co-authors in a trial used a new and non-invasive way involving examination of the optical flow patterns obtained from cameras inside broiler houses the chickens’ behaviour involved. (Colles et al. 2015).

Poultry birds commonly suffer from nutritional deficiencies especially due to intensive farming with less mobility and poor nutrients. Early detection of these problems might help to reduce such losses. Bone deformities, leg problems reduced growth of chicks need timely discovery which can be achieved using machines and robots.

### **Use of AI in Feeding trials and research activities**

Artificial intelligence can be effectively used to collect data while conducting research trials. Using machines, sensors, cameras huge amount of data can be collected which generally takes time when gathered manually. Large amount of data can be

monitored at a single point of time and evaluate and do comparative studies using data analysis. Softwares are commonly used to formulate feed rations for poultry depending on different age, sex and stage of growth and production and similar application can also be used to manipulate the formulation depending on the requirement of the birds via monitoring the different parameters. Evaluation of different feed formulations for different poultry birds at various stages is tedious to carry out by human. Computer programming and robotics can assist in assessment of these feed formulations and also help improving genetics of the breed. Breed characterization and selection processes of breeds with desired traits can be done with ease and also reduce the trial costing appreciably and provide with accurate trial results. Research and development is one of the expensive affairs in any poultry industry. Here artificial intelligence can help to deal with that expense efficiently and also allow conducting trials smoothly.



**Fig: Computer vision system for egg collection**

### **AI use in Poultry Processing**

AI technologies have become the backbone of many other technologies and are no lagging behind in its use in poultry processing. In order to improve the efficiency of processing units, uses of robots have started and AI has marked its application in the production as well as in the processing practice. Use of AI have great importance in poultry

processing such as identification of disease in the animals during ante-mortem inspection, condemnation of carcass, sorting of cut up parts and in-edible parts etc. Processes like stunning, defeathering, chilling, freezing, deboning depending on the type of birds, maintaining temperature, bone and muscle density and various other parameters can be easily identified by the use of computer applications and thereby can be effectively perform the processing procedures. A study showed that the development of a line-scan machine vision system and multispectral inspection algorithm for evaluation for differentiation of wholesome and diseased chickens was effective (Chao et al. 2010).

Artificial intelligence can be successfully used in layer industry and egg processing industry for grading of eggs and for further packaging based on the quality. Machine vision when combined with smart automation has allowed processing industry to improve the quality of carcass and packaging of broiler meat.

Many multinational based co-operations such Global giant, Tyson food has already established computer vision system consisting of cameras, machine learning algorithm to track the quantity of chicken moving through their production systems. They have decided to shift to smart mechanization and use of artificial intelligence to improve the product value chain (Hockett, 2020).

Poultry industry is suffering from many challenges like high raw material prices and diseases outbreak like avian influenza etc. AI can positively impact the whole industry to improve efficiency of the process and make chicken and egg affordable for the large proportion of population at low cost.

### **Miscellaneous uses**

Demonstration of new technology to stake holders will become much easier when AI is adopted and will help to disseminate any new technology at a much faster rate and adapt such technology in no time.

### **Conclusions**

Development in poultry farming has been rising immensely at a faster pace to meet the increasing growing demand and use of AI and other digital technologies can propose poultry producers a huge benefit to meet this mounting demand with much efficiency.

There is hardly any doubt that on application of Artificial Intelligence in poultry industry can bring drastic changes in the production process and its efficiency in production method. In the near future AI will reshape poultry industry and help address many challenges and will have a constructive role to play in bringing efficiency with reduced error. Many companies have started assessing the use of AI at various levels of production chain and have adopted them. Poultry industry involve numerous challenges which are difficult to solve with human resources only and requires application of softwares, machines and robotics to collect as well as analyse the mountain of data involved. Thus any improvement in the production cycle with the use of new technologies will reduce the cost of production of poultry products such as meat and egg.

The use of Artificial Intelligence in poultry industry can help to reduce human interference, improve efficiency of farming and ultimately maximize profit. As poultry industry has always showed a persistency in its growth rate thereby digital technologies can also be implemented inefficiently to help farmers achieve competence. For developing country like India, poultry industry has a brilliant outlook where livestock influence GDP. Thereby it is hoped that the Artificial Intelligence can bring a paradigm shift in the development of the poultry industry.

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- Breeder Management.
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- Field Trial of Drugs & Feed additives.
- Speaker in Technical Seminars.

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Email : [drmanu69@gmail.com](mailto:drmanu69@gmail.com)

As a strategic partner, Poultry Line wishes Dr. Shukla every success in his new assignment

# Chromium-Forgotten Hero (Need of Hour)

**Author: Dr Manoj Kumar Dev Sarma, Director-**  
Bhuvana NutriBio Sciences, [www.bhuvanansbs.com](http://www.bhuvanansbs.com)



Chromium is used in poultry diet because of its anti-stress effects, various nutritional and immune enhancing effects. Chromium propionate has beneficial impacts on metabolism of nutrient, growth performance, feed efficiency and immune health in poultry.

Chromium (Cr) is an essential mineral which was first demonstrated by Schwarz and Mertz in rats and by Jeejebhoy, et al., (1977) in humans. Cr plays a vital role in



**Dr Manoj Kumar Dev Sarma**

livestock and poultry production. One major role of Cr in both human and animals is its involvement in glucose metabolism. Chromium potentiates the action of Insulin and increases insulin sensitivity through its association with glucose tolerance factor, helps control appetite, hypoglycemia and protein uptake.

The Principal route by which Chromium enters the body is through digestive system.

Chromium is the most abundant mineral in the crust of the earth. Cr is one of the transition elements and found in valencies of +2, +3 and +6. Hexavalent chromium is mostly of Industrial origin and toxic. Trivalent Chromium is the most stable oxidation state in which Cr is found in living organism. Organic sources of Cr are ten times more bioavailable than inorganic sources.

## **BENEFICIAL EFFECT OF CHROMIUM-**

1. Effect of Metabolism and digestion of Nutrients : Chromium involved in carbohydrate, protein and lipid metabolism. Cr enhance the insulin sensitivity and reduce the plasma glucose concentration in birds. Cr acts as a cofactor of insulin activity and required for proper glucose metabolism.

2. Growth rate and feed utilization: Supplementation of Chromium at different dose levels in poultry diet improved feed efficiency, live weight gain and carcass quality.
3. Egg production: Dietary supplementation of Chromium in the diet of laying hen increased production performances and egg quality.
4. Semen quality and reproductive parameters: There is significant improvement in semen quality

by supplementation of chromium. The improvement in semen quality may be attributed to the antioxidant activity of chromium which maintained the integrity of cell membrane and reduced the oxidants damage.

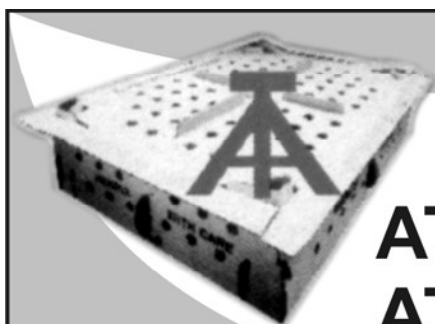
5. Carcass traits: Sahin et al. reported that increased supplemental chromium resulted in an increase in carcass traits of broiler chicks fed on the basal diet supplemented with chromium at levels of 200, 400, 800 and 1200  $\mu\text{g kg}^{-1}$  diet under heat stress condition, as compared with those fed on the basal diet. Huang et al.<sup>21</sup> reported that chromium addition increased dressing percentage and decreased abdominal fat percentage of broiler chickens exposed to heat stress in comparison with control.
6. Antioxidant activity: Stressors and diseases can increase urinary excretion of chromium and may aggravate a marginal chromium deficiency in poultry and domestic animals. These stressors including heat stress increased production of free radicals which damage the body cells and result in increased poultry morbidity and mortality.

7. Effect on Immune health: Chromium have different kinds of humoral and cell mediated immunomodulatory effect. Chromium propionate supplementation improved the antibody response of broiler to vaccination against RD.

**Conclusion:** Chromium plays an important role in poultry nutrition, production and health as well as enhances growth performance. Chromium is also a potent hypercholesteraemic and antioxidant agent. The dietary Cr has useful impacts on feed utilization, antioxidant defence system, immune response, lean carcass quality, growth and production indices and quality of egg. Moreover, it is very helpful especially in birds exposed to heat-stress conditions. Birds fed diet enriched with Cr revealed higher doses of Cr and other trace elements

compared to those without any supplementation. Beneficial impact of Cr such as lowering serum concentration of total cholesterol, triglycerides and glucose had been noticed in poultry species fed diets supplemented with chromium, indicating the positive health-effects. Poultry fed diet supplemented with chromium significantly revealed higher levels of chromium and other trace elements compared to those without any supplementation. Cr Propionate with good RBV (Relative Biological Value) is suppose to be best option in poultry & animal ration to manage stress

- It significantly helps to maintain vaccine titres in breeders and improve FCR in layers & broilers
- Addition of good synthetic Vit.C and quality Betaine with Chromium will give synergistic effect to manage stress



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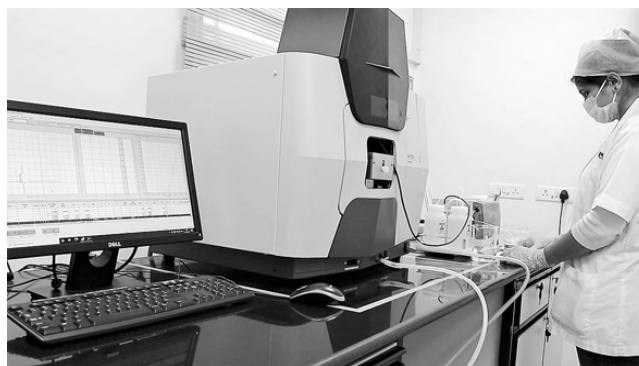


## The Research & Development Centre of Zeus Biotech is now NABL Accredited



**Wet Chemistry Facility in Quality Control Department**

The Research and development centre of Zeus Biotech is now accredited for ISO/IEC 17025 by National Accreditation Board for Testing and Calibration Laboratories (NABL). The analytical laboratory operating at the R & D Centre has been accredited by the apex laboratory accreditation board to carry out and issue reports of proximate analysis of feed and feed materials. The analytical facility which has been catering to poultry and other livestock farmers, integrators, and feed manufacturers across India and overseas for more than a decade, will now be able to release analytical reports with international acceptancy.



**Mineral Analysis Facility in Department of Research & Development**

The research centre which is one of the most modern animal nutrition dedicated biotech facilities in India, hosts multiple departments including Microbial Culture Collection, Research & Development as well as Quality Control. The centre which is spread over an area of 10,000 square feet and equipped with analytical instruments such as Liquid Chromatography, Mineral Spectroscopy, NIR, Thermocycler, etc., is skilled in molecular biology techniques, microbial culture handling and processing, quality testing of feed, feed raw materials and feed supplements, as well as testing of water parameters. The Culture Collection centre



**Liquid Chromatography in Department of Research & Development**



**Culture Processing in Microbial Culture Collection Centre**

maintains numerous feed targeted fungal and bacterial in-house strains with area of application including production of probiotics, feed specific enzymes, yeast culture, organic minerals, and other related applications. The inhouse Quality department which follows European Feed Safety Authority guidelines and other international standards for its Quality system, analyses and confirms 25 – 30 quality and safety parameters in each product before release from its warehouse facilities.

Established in the year 1991 by our founder Late Dr. Jay Prakash Nair, Zeus Biotech is one of the leading animal feed supplement manufacturing companies in India providing all-natural feed supplements to various sectors of livestock like poultry, ruminants, piggery, and aquaculture for more than 30 years. Through their core expertise in biotechnology and feed specific Solid-state fermentation (FS-SSF), Zeus Biotech produces

some of the leading product lines including, Fermented Organic Trace Minerals, Feed Specific SSF Enzymes, Yeast Culture, etc., exclusively for animal supplementation. Organomin Forte, Microguard, Polyzyme and Rumiyeast are some of the leading brands from Zeus Biotech. The organisation also produces unique line of Bacillus based probiotic strains at their submerged fermentation facility for some of their leading probiotic product brands including Microguard and NE-Guard. Zeus Biotech presently serves to customers in India and more than 20 countries including Malaysia, Thailand, Vietnam, Philippines, Australia, UAE, Oman, Qatar, Kuwait, Jordan, Egypt, Kenya, Tanzania, Nigeria, Ghana, Mozambique, Uganda, Bangladesh, Bhutan, Nepal, and Sri Lanka. The company which currently owns three feed supplement dedicated manufacturing facilities in Mysore, Karnataka with production automation and commissioning fourth manufacturing facility by 2025.

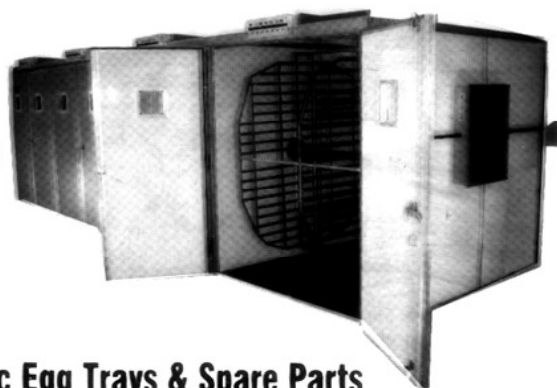


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place	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Hyderabad	111	111	105	100	90	90	90	95	100	102	104	106	106	106	106	108	113	113	113	113	113	115	118	123	128	133	138	138
Karimnagar	111	111	105	100	90	90	90	95	100	102	104	106	106	106	106	108	113	113	113	113	113	115	118	123	128	133	138	138
Warangal	111	111	105	100	90	90	90	95	100	102	104	106	106	106	106	108	113	113	113	113	113	115	118	123	128	133	138	138
Mahaboobnagar	111	111	105	100	90	90	90	95	100	102	104	106	106	106	106	108	113	113	113	113	113	115	118	123	128	133	138	138
Kurnool	111	111	105	100	90	90	90	95	100	102	104	106	106	106	106	108	113	113	113	113	113	115	118	123	128	133	138	138
Vizag	112	112	106	101	92	92	92	97	102	104	106	108	108	108	108	110	115	115	115	115	115	117	120	125	128	133	138	138
Godavari	112	112	106	101	92	92	92	97	102	104	106	108	108	108	108	110	115	115	115	115	115	117	120	125	128	133	138	138
Vijayawada	112	112	106	101	92	92	92	97	102	104	106	108	108	108	108	110	115	115	115	115	115	117	120	125	128	133	138	138
Guntur	112	112	106	101	96	96	96	101	106	108	110	110	110	110	112	117	117	117	117	117	117	119	122	127	130	135	140	140
Ongole	112	112	106	101	96	96	96	101	106	108	110	110	110	110	112	117	117	117	117	117	117	119	122	127	130	135	140	140
Chittoor	117	117	117	117																								
Namakkal	96	96	94	94	94	94	94	94	94	94	96	98	100	100	100	100	100	100	100	106	108	112	114	116	116	119	121	121



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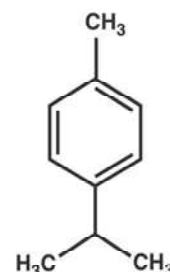
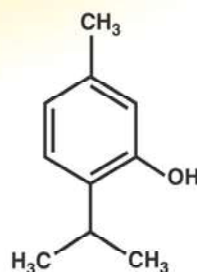
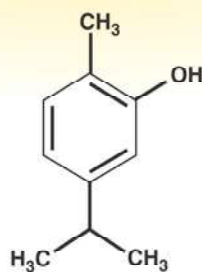


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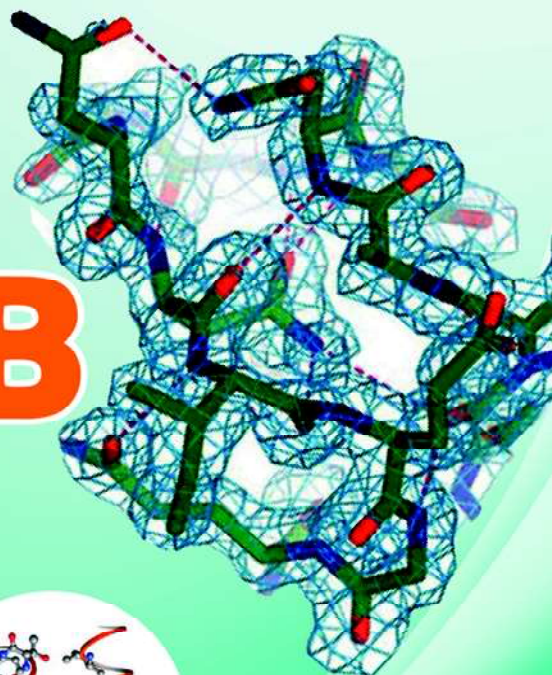
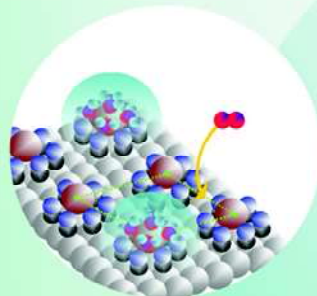
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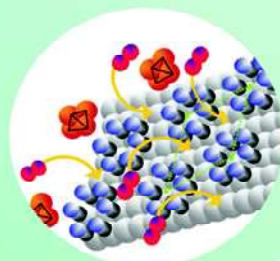
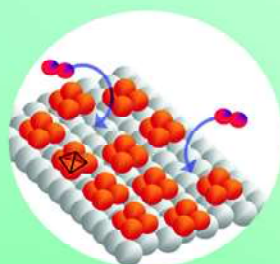
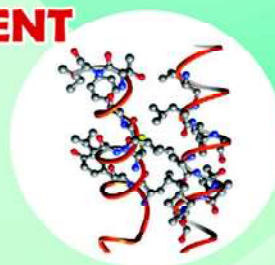
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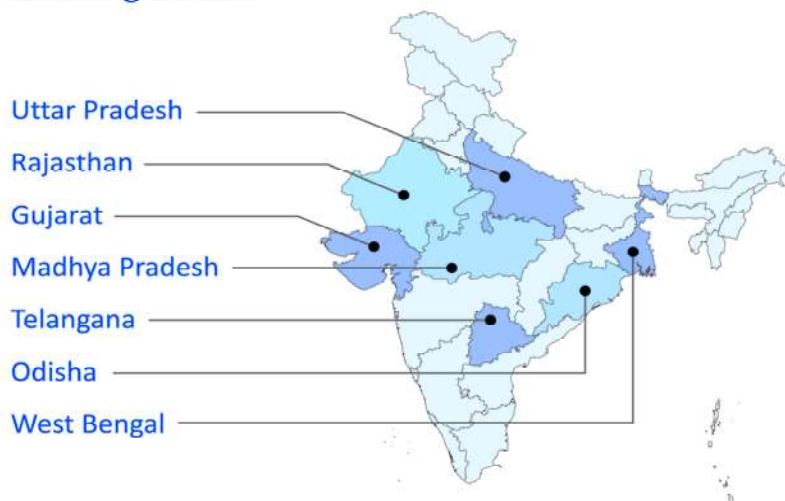
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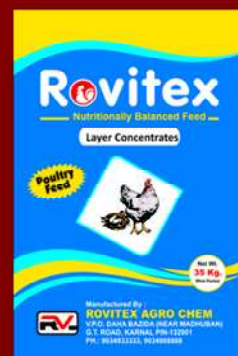
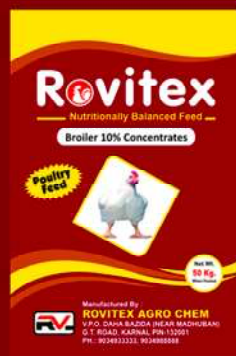
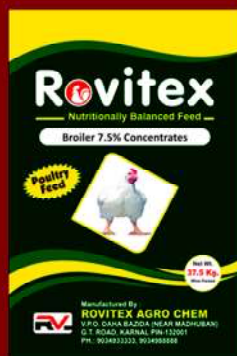
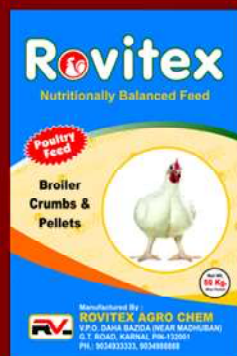
- ❖ Broiler 10% Concentrates
- ❖ Broiler 7.5% Concentrates
- ❖ Broiler 5.5% Concentrates
- ❖ Broiler 3.5% Concentrates
- ❖ Broiler 2.5% Concentrates
- ❖ Broiler 1.5% Concentrates

### Layer Concentrates:

- ❖ Layer 5% Concentrates
- ❖ Layer 10% Concentrates
- ❖ Layer 25% Concentrates
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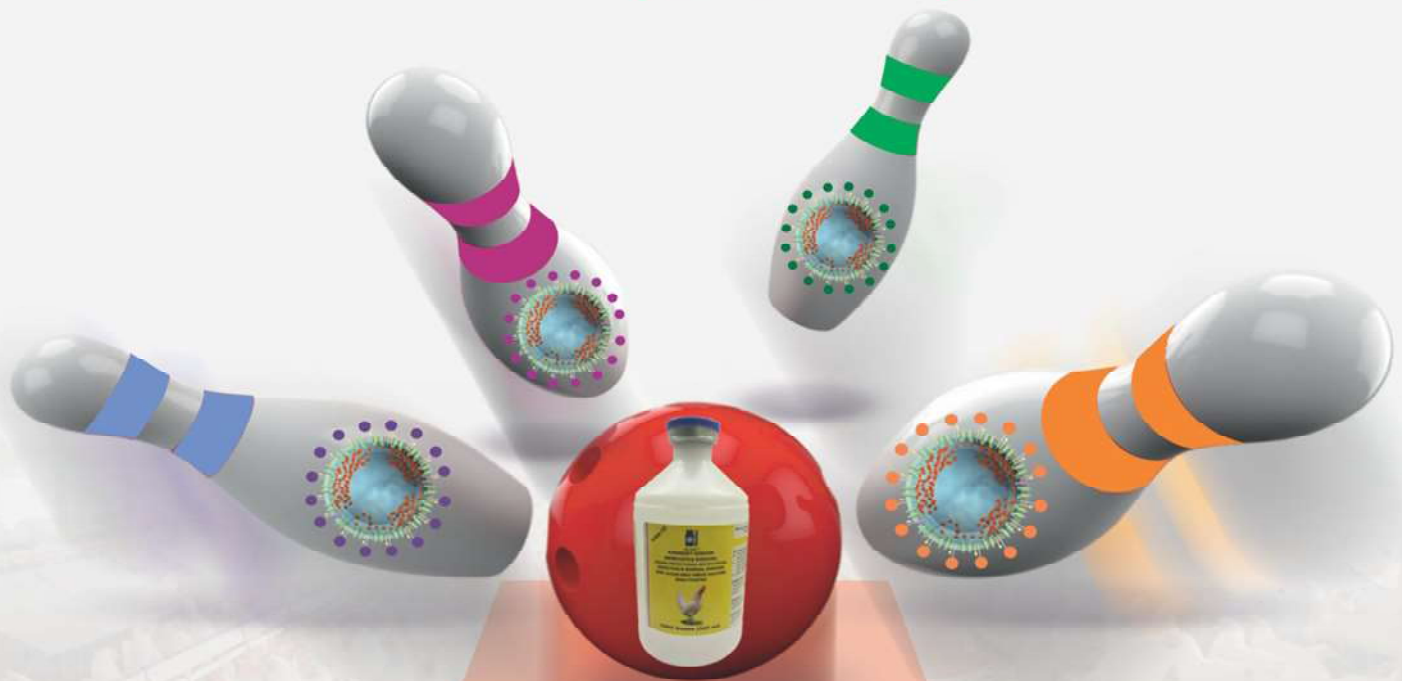
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