

# Poultry Fortune

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November 2022

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Incubation to Produce  
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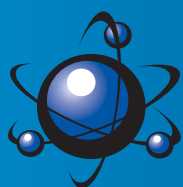
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# Eating only Vegetarian diet will not meet your daily Protein requirement

**Poultry stakeholders did well in celebrating World Egg Day, to promote Egg consumption**

*First 10 days body weight has spring board effect to perform at the best till the end. Similarly, first 10 days body weight is equally important in layer and broiler chicks. At the same time controlling early chick mortality is extremely challenging in spite of the best management practices. The commonest causes of mortality found in the first 10 days were the stress factors like transportation, vaccination, omphalitis, yolk sac infections, septicemia, E.coli and Enterococcus spp.*



**Dear Readers,**

The November 2022 issue of **Poultry Fortune** is in your hands. In the news section, you may find news about ....

Industry stakeholders did well in celebrating World Egg Day, to promote egg consumption. The best way to help poultry industry to grow is through bringing awareness among people on the nutrition and protein value of Eggs and Chicken. Take Egg Day as well as Chicken Day a good platform for promotion. **Vets In Poultry** office bearers did a good job of collecting photos of World Egg Day celebrations from different states and cities, and we suggest them to collect from much more states and cities in India in the coming year.

**CLFMA Chairman, Neeraj Kumar Srivastava**, in its recently held symposium said, change is the only constant. India's livestock industry is undergoing a transformation, in tandem with positive macroeconomic and demographic trends. Our current focus is the adoption of modern solutions to overcome existing and upcoming challenges. We appreciate the government's approachability, which is allowing for faster growth of the industry. Parshottam Rupala, Minister of Fisheries, Animal Husbandry and Dairying (AHD) department, Govt. of India said that India is heading down a new path to success and we are glad to be collaborating closely with the industry. The government will take cognizance of all innovations highlighted by technical experts. The achievements of this industry are building up the nation. He recommended implementing waste-to-

wealth strategies for the disposal of dead animals. He added that the government is considering PPP (public-private-partnership) models for animal health in alignment with India's One Health vision.

**U.S. Soybean Export Council (USSEC)** organised a conference on "Right to Protein" in Bangalore on 21 October 2022 and it was an awareness initiative to educate people about the importance of adequate protein consumption for better nutrition, health and wellbeing. **Right to Protein** initiative aspires to build knowledge of different types of protein sources amongst people, especially plant protein to meet larger nutritional goals. Some of the expert speakers mentioned that eating only Vegetarian diet will not meet your daily Protein requirement.

**Mr O.P. Singh** strongly opined that poultry is the ultimate protein. No Soybean, no other Vegetarian diet can match with Chicken and Eggs. Every child in the nation needs animal protein. It is the most valuable food. But industry stakeholders should come together and unite for the common purpose of creating awareness among people about the value of eggs and chicken and promote their consumption in India. Did we ever focus on rural segments to match their expectations as protein producers? However, more than 75 per cent of eggs and 100 per cent broilers produced commercially are consumed in the cities and towns. Despite 50 years of existence of poultry industry, be shameful to accept the fact. Poultry is the largest protein provider in India and in the world.

**Karnataka Poultry Farmers & Breeders Association** along with Sapience Agribusiness Consulting organised a knowledge session on 20 October 2022 in Bengaluru with the theme **One Health and the Nature of Interconnectedness**

*Contd on next page*



**Poultry Fortune**

**Our Mission**

**Poultry Fortune**

will strive to be the reliable source of information to poultry industry in India.

**PF** will give its opinion and suggest the industry what is needed in the interest of the stakeholders of the industry.

**PF** will strive to be The Forum to the Stakeholders of the industry for development and self-regulation.

**PF** will recognize the efforts and contribution of individuals, institutions and organizations for the development of poultry industry in the country through annual Awards presentation.

**PF** will strive to maintain quality and standards at all times.

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between Human Health, Animal Health and the Environment. Dr Sushant Rai, President of KFPBA, brought the meeting to order and established the significance and importance of the knowledge session's theme. Mr Prashant Kumar, Director, Sapience hosted the event and kick started the programme with an overview of One Health. Dr G.B. Puttanaiah, Chairman of the technical committee of KFPBA, provided a keen overview of the session and drew attention to the importance of working together to preserve our interconnected ecosystems and the need to understand emerging diseases in poultry farming. He then asserted the need to evaluate and prudently use antibiotic alternatives, such as bacteriophages.

**Valvin Nutraceuticals** held its first technical seminar in Hyderabad and Karimnagar, Telangana on 28 and 29 October 2022. Participants from the poultry industry attended the technical conference, including poultry farmers, breeders, integrators, veterinarians and business leaders. Mr Pavan Moova, Director – Operations at Valvin Nutraceuticals, highlighted how important is mineral nutrition in poultry and specifically organic trace minerals. **Dr Jayaraman Krishnarajan**, Chief Consultant, Pune presented about Less for More – Mineral Management & Nutrition in Poultry. Practically explaining his vast experience and research data that shows what should a farmer be aware of when he looks at choosing trace minerals. How inorganic and organic plays a role in absorption, bio availability and significance of elemental value.

**Karnataka Poultry Farmers and Breeders Association and the Karnataka Veterinary, Animal and Fisheries Sciences University** jointly set up Poultry Training Center & Diagnostic Laboratory in Bengaluru on 25 August 2022. The Lab housed in KVAFSU campus will do pioneering research to do with promotion of poultry health. A memorandum of understanding (MoU) was signed between KVAFSU and KFPBA on this wherein the latter will run the courses, free of charge for farmers and students. The Minister for Animal Husbandry & Fisheries, Mr Prabhu Bamala Chavan assured the poultry sector that he would help remove any hurdles in the growth of the sector.

**Biosint Nutraceuticals** established its R&D facility for field the trials of their products from last 18 years as a unit under firm known as A & L life sciences. For the new innovative product line Biosint Nutraceuticals collaborates the research work with Directorate of Poultry Research, Indian Council of Agricultural Research (ICAR). **Dr R.N. Chatterjee**, Director-Directorate of Poultry research ICAR-Rajendranagar, Hyderabad said that this Industry-Academic collaboration will continue its research throughout the year for developing innovative concept that can support poultry producers to increase their income. This is just a beginning of supporting the rural economy. **Dr Ravi Pachaiyappan**, Founder and Director, Biosint Nutraceuticals explained that research remained philosophy of the organization since inception, further its continence is now possible through such technocratic institutional collaborations. The facility is unique and perfect place to undertake research projects on genetics, nutrition and health.

**Novus International, Inc** is among the top players in the organic trace mineral and enzyme segments in India. Due to the increasing awareness around anti-microbial resistance worldwide and consumer and regulatory pressures to limit the use of antibiotic growth promoters in animal production, there's an increased focus on improving gut health and

immunity. Our diverse product offerings, which are supported by extensive research, make Novus well-positioned to support our customers in these areas. Where sustainable growth is concerned, efficiency is key. Using precision farming to boost yield and adopting feeding programs that focus on improving gut health and immunity through functional ingredients like essential oils and feed enzymes can support sustainable livestock production, said Mr Dan Meagher, President & CEO, Novus International, Inc.

**In the Articles section – Types, nutrition, health advantages and negative effects of eggs**, authored by Dr Rambabu.D, Associate Professor, Dept. of Poultry Science, College of Veterinary Science, Korutla, PV Narsimha Rao Telangana Veterinary University, Jagtial District, Telangana State, said that – An egg is the best super food in the planet. It helps you stay healthy and fend against chronic illnesses because of its complete protein content, abundance in vital vitamins and other antioxidants. Because they are a source of complete protein and include all nine essential amino acids as well as important vitamins, eggs are one of the world's most nutrient-dense foods. Eggs are strongly recommended by doctors and nutritionists as a necessary component of a balanced diet.

Article titled **Single-Stage Incubation to Produce Top Quality Chicks**, authored by Pradeep G. Kolte, Sales Manager – Asia, Jamesway Chick Master Incubator, Pune, informed that Single stage machines can produce top quality chicks. Performance of these top-quality chicks is much better in terms of feed conversion efficiency and mortality, which will yield more meat. JCMI single stage machines are most energy efficient on the industry. Single stage machines can enhance biosecurity in upcoming disease challenges.

Another article titled **The Gut-Lung Axis in Poultry Health and Disease**, authored by Prof R.N. Sreenivas Gowda, Founder VC, KVAFSU, Former Director, IAH&VB, Former Prof. and Head, Veterinary Pathology, UAS, Bangalore, said that Respiratory diseases are common in poultry because of its anatomy, physiology and functions. Respiratory infections are caused by Bacteria, Virus, fungi and parasites. Interest in the study of lung microbiota has steadily increased over the last decade and it is now widely accepted that the lungs harbor bacterial communities like those of the gut, the micro-organisms of the respiratory and gut microbiota play a role in health and diseases.

Results in Layer and Broiler farming can be achieved as per specifications when the breeder guidelines are followed. Farmers and Integrators have to give sufficient time and attention to farm management and check the developments there time to time to ensure results. When you invest your hard earned money into it, a little more care and attention can prevent losses and help in profitable farming all the time.

Readers are invited to send their views and comments on the news, special feature and articles published in the magazine which would be published under "Readers Column". Time to time, we shall try to update you on various aspects of Poultry sector. Keep reading the magazine Poultry Fortune regularly and update yourself. Wish you all fruitful results in your efforts.

**M.A.Nazeer**  
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## Vets In Poultry Celebrates World Egg Day 2022 with the theme “Eggs for Better Life”

**Pune:** India is one of the fastest growing countries in terms of population, economy, infrastructure, information technology and other segments. In spite of the high growth rate in India, poverty, malnutrition, nutritional security remains serious and persisting concerns. Child malnutrition is a chronic problem and a longstanding challenge for the public administration of India.

World Egg Day was celebrated across the globe on 14 October 2022. Theme for Year 2022 was Eggs for better life. Vets In Poultry, association based in Pune having more than 1000 members actively working in Poultry Farming has also actively celebrated World Egg Day all over

India. Activities were decided under the guidance of Dr Ajit Ranade, Technical Advisor, Vets In Poultry, Dr Ajay Deshpande, President, Vets In Poultry and Dr V.R. Kulkarni, Vice President, Vets In Poultry along with Executive Committee Members and newly appointed Regional Heads for Vets In Poultry.

Objective was to create awareness among common people about health benefits of Eggs and also remove myths. Team Vets In Poultry tried to convey message through banners and verbal presentations that Eggs are amongst the most nutritious food stuffs available with one large egg providing 13 essential vitamins and minerals, including Vitamin A for eye

health, Vitamin D for bone health and choline for brain development, along with high-quality protein.

Malnutrition is one of the bigger challenges in India and it's not a condition affecting only the poor, it cuts across all social-economic groups across India. Under nutrition is caused by the insufficient intake and / or inadequate absorption of energy, protein, or vitamins and minerals (micronutrients) that in turn lead to nutritional deficiencies. A majority of the time, this happens due to a lack of awareness about nutrition and myths about various food items.

Team Vets In Poultry reached many orphanage homes, Old age homes, Sports groups, Schools, Colleges and common people to create awareness about ongoing Protein Malnutrition in India and explained how eggs can play role in alleviating malnutrition. This was very innovative initiative by team Vets In Poultry.

*Glimpses of the Event at Various Places in India is given below*



*Dr Ravinder Reddy celebrated World Egg Day at a School in Telangana*



*Dr Shaitan Singh Rathore celebrated World Egg Day with under privileged children in Phagwara, Punjab*



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Dr Santosh Ire and Dr Shyam Vane celebrated World Egg Day with Children at Orphanage home and Old Age at Apla Ghar in Pune



Dr Sachin Ingewar celebrated World Egg Day at Nagpur



Dr Rais and Dr S.R. Anand celebrated World Egg Day with college students in Anand, Gujarat



Dr Rathod, Dr Anil Phadke and the Team celebrated World Egg Day with different school and sports group in Nashik



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Dr Jeevan Sonawane, Dr Atul Patil and Dr Nitesh Kadam celebrated World Egg Day at Girija Old age & orphanage home in Kharghar, Navi Mumbai



Dr Jeevan Sonawane celebrated World Day with Cricket Saga sports children in Dombivali, Mumbai



Dr Jeevan Sonawane celebrated World Egg Day with Society Members in Dombivali, Mumbai



Dr Ajit Ranade celebrated World Egg Day with students at Mumbai Veterinary College



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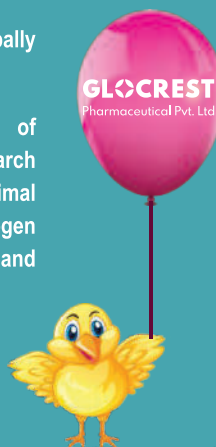
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Dr Shivaji Bhosale celebrated World Egg Day at a School in Solapur, Maharashtra



Dr Mahendra Singh celebrated World Egg Day Jabalpur, Madhya Pradesh



Dr Sahebrao Rathod and Team celebrated World Edd Day with school children in Nashik, Maharashtra



Dr Mukund Kadam celebrated World Egg Day with students at Nagpur Veterinary College





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*Team IVPI celebrated World Egg Day with students at Bangalore Veterinary College*



*Dr Bimal and Team celebrated World Egg Day with students at Bhuvaneshwar, Odisha*



*Dr Banibrata Maity and Team celebrated World Egg Day with students at Bhuvaneshwar, Odisha*





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- Eggs are vegetarian



# WORLD EGG DAY

'He who can take milk  
should have no objection  
to taking infertile eggs'  
- Mahatma Gandhi

### Need to work together

Over the course of time, various governments have initiated several large-scale supplementary feeding programmes aimed at overcoming specific deficiency diseases to combat malnutrition. This includes programmes such as the distribution of prophylaxis against nutritional anaemia, the Special Nutrition Programme, the Balwadi Nutrition Programme, the ICDS programme, and mid-day meal programmes. Although these programmes are yielding some results, they need to work aggressively on this front. Animal protein sources like milk, eggs and chicken can play a significant role in alleviating malnutrition in India.



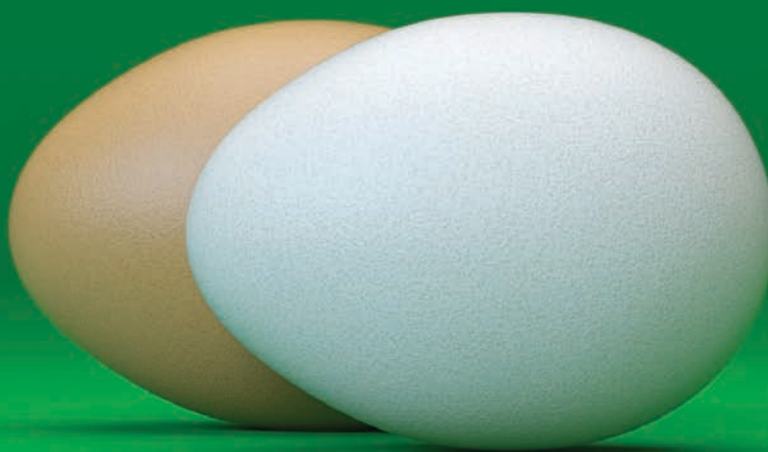
Fighting with malnutrition requires national level planning, detecting malnutrition and intervention and nutritional education. We all need to create more awareness about daily protein requirements and sources of protein. Vets In Poultry appeal all Poultry producers, government authorities, social media influencers, dieticians, medical practitioners, the National Institute of Nutrition, or the Indian Council of Medical Research to align with one goal of fighting malnutrition.

Investing in the first 1,000 days from conception to a child's second birthday shapes the future of the nation. Ending stunting and other forms of undernutrition saves lives, improves health and prospects for children, and improves overall development progress. This makes the fight against undernutrition a national imperative.





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# Eating only Vegetarian diet will not meet your daily Protein requirement: Experts say

Poultry is the largest Protein Provider in India and in the World – O.P. Singh

*Did we ever focus on rural segments to match their expectations as protein producers? However, more than 75 per cent of eggs and 100 per cent broilers produced commercially are consumed in the cities and towns. Despite 50 years of existence of poultry industry, be shameful to accept the fact. Poultry is the largest protein provider in India and in the world.*



Speakers from left: Jaison John, Dr Kavitha Reddy, Dr Deepika Chalasani, Dr Vijayalakshmi, Prof. G. Devegowda and O.P. Singh

**Bangalore:** Eating only Vegetarian diet will not meet your daily Protein



Jaison John,  
Team Lead, USSEC

requirement, said experts related to Nutrition and Dieticians addressing a conference on “Right to Protein” in Bangalore on 21 October 2022.

**Mr Jaison John**, Team Lead, U.S. Soybean Export Council (USSEC), welcoming the speakers and the guests on organising conferences with a different theme “Right to Protein” in different places. **Right to Protein** is an awareness initiative to educate people about the importance of adequate

protein consumption for better nutrition, health and wellbeing. **Right to Protein** initiative aspires to build knowledge of different types of protein sources amongst people, especially plant protein to meet larger nutritional goals.

**Prof. G. Devegowda**, President, Institution of Veterinarians in Poultry Industry, speaking on the theme “Right to Protein” said that Vitamin B-12 is important and it is not available in Vegetarian Protein and it is available in Animal Protein. Only



29% Indian population are vegetarians and 71% are non vegetarian. Human being eat both animal protein and plant protein source of diet. Nowadays vegetarians are consuming eggs in their daily diet in order to have healthy diets. We consume more carbohydrates. Using two eggs per day and meat is important to fight against malnutrition, he stated.

Some of the sports persons who are fit consume half a kg chicken and six eggs per day. Take two eggs a day and keep the doctor away, he remarked.

## Production in 2021

**Milk : 210 million tonnes**

**Eggs : 12,200 crores**

(90 egg per day)

**Chicken : 6 million tonnes**

(4 to 5 kg chicken per day)

**Dr Kavitha Reddy**, Dietician / Nutritionist, Shreya Nutrition, Hyderabad, Ph.D from CFTRI, Mysore in Food Science; **Dr Deepika Chalasani**, Dietician / Nutritionist, Fellowship in Clinical Nutrition, Post Graduate Diploma in Nutrition and **Dr Vijayalakshmi**, Nutritionist / Dietician and Prof & Head, University of Agriculture Sciences, Bengaluru spoke on the occasion. The experts advised that it is necessary that people have complete meal with Protein in every meal of the day and try to make a three meal a day instead of two meal a day. Eat food only when you are hungry, they added.





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I enjoy my animal and peanut based protein. 73% Indians are protein deficient and 90% are unaware of the daily requirement of diet. 80% of Indians depend on pulses, cereals and milk as the primary source of protein, but pulses and cereals are not complete and efficient protein source. Protein makes heat in the body. Kidneys need protein at later age of human, protein is required in every meal, 0.8 to 1 gram is needed per ideal body weight per day, said **Dr Deepika Chalasani**.

Proteins are buildings blocks of the body. RDA differs on age factor. The food has to be balanced in order to maintain good health, said **Dr Vijayalakshmi**.

#### **O.P. Singh, the Angry man for Poultry Development**

**Mr O.P. Singh**, Managing Director, Huvepharma SEA, Pune, made his presentation on the topic **Protein: An Inclusive Growth Model for Sustainability**. Most of his 20 minutes speech went in angry mood.

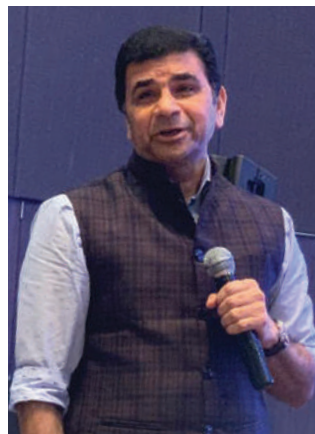
Poultry is the ultimate

protein. No Soybean, no other Vegetarian diet can match with Chicken and Eggs. Every child in the nation needs animal protein. It is the most valuable food. But industry stakeholders should come together and unite for the common purpose of creating awareness among people about the value of eggs and chicken and promote their consumption in India.

For 60 to 70 years, we have been Vegetarians, but what have we achieved? How many sports persons we have? And how many healthy people we have? – Mr O.P. Singh questioned the audiences and the industry.

Did we communicate the Nutritional merits of our products to the consumers? Are we addressing the social complexion? Some are non vegetarians at hotels and they are vegetarians at home, he stated.

Did we ever focus on rural segments to match their expectations as protein producers? However, more



**O.P. Singh,**  
**Managing Director,**  
**Huvepharma SEA, Pune**

than 75 per cent of eggs and 100 per cent broilers produced commercially are consumed in the cities and towns. Despite 50 years of existence of poultry industry, be shameful to accept the fact. Poultry is the largest protein provider in India and in the world.

O.P. Singh was displeased with poultry stakeholders as they failed to do needful to promote egg and chicken consumption and in making poultry profitable. The earlier you change the things, you will help the industry to grow. You never invested in supply chain, but only focusing on expansion of

your production, which is not appropriate. Build utmost transparency in farming and processing setup, he added.

How many poultry companies have allotted space for R & D, he asked. Scientific community and Veterinarians should do their job well, Mr O.P. Singh stated.

#### **Take home message:**

1. Managing the consumer transition sentiments and building robust communication network to conceive nutritional and food safety issues.
2. Penetrating Logistics ensuring the availability of the product.
3. Approaching international market through government and private routes to facilitate international trade.
4. Ensuring relevant CAPAEX deployment in desirable areas than expansions.
5. Building utmost transparency in farming and processing setup.

#### **India's Protein Deficiency and Consumption – Some Statistics**

- 73% of Indians are protein deficient.
- 90% are unaware of the daily requirements of protein.
- Lowest average protein consumption compared to other Asian countries and developed nations.
- Average protein consumption of 47 grams per day.
- 71% between 30 to 55 years suffer from poor muscle health, because of protein deficiency.
- Need to consume over 2100 calories diet to get sufficient protein.
- Over 2100 calories diet can cause obesity for adult sedentary Indians.
- Increase the predisposition to LSD viz, diabetes, heart attack, cancer etc, as its carb heavy.



**From left: Inayath Ulla Khan, Executive Secretary, KPFBA; M.A. Nazeer, Editor, Poultry Fortune; Devvrat More; Jaison John, Team Lead, USSEC and Dr G. Gopal Reddy, Vice President, IVPI during Right to Protein held in Bangalore on October 21.**



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# Navigating to the future of animal agriculture in India - Highlights of CLFMA's 63rd National Symposium 2022

**Mumbai:** The Compound Livestock Feed Manufacturers Association of India (CLFMA) conducted its 55<sup>th</sup> Annual General Meeting and 63<sup>rd</sup> National Symposium 2022 in Mumbai on September 30 and October 1 at Hotel Leela, Mumbai. The theme of the event was 'Changing Dynamics of Indian Animal Agriculture' which aimed to capture and assess industry trends, identify key challenges and plan the future for the sector.

About 450 participants representing all segments in the animal value chain - academicians, feed manufacturers, aqua farmers, animal health and nutrition experts - attended the forum.

Welcoming dignitaries, speakers and members,



**Suresh Deora, Convenor & Secretary, CLFMA,** said, "I would like to extend a warm welcome to our chief guest Mr Parshottam Rupala to the inaugural of our 63rd symposium. He



*Union Minister for Fisheries Parshottam Rupala and other dignitaries lighting the lamp to mark the inauguration of CLFMA's 63rd National Symposium at Mumbai on 30 September 2022.*

has been a guiding force for welfare schemes for the betterment of farmers across India. I welcome Mr Jatindra Nath Swain who has been spearheading the Blue Revolution project, a central government scheme to help aqua farmers in the country and Balram Singh Yadav of Godrej Agrovet - a veteran of the industry. I would also like to welcome Mr Tarun Shridhar, Former Secretary AHD, a great supporter of the animal industry."

Introducing the session, **Neeraj Kumar Srivastava, Chairman, CLFMA,** said, "Change is the only constant. India's livestock industry is undergoing a transformation, in tandem with positive

macroeconomic and demographic trends.



Our current focus is the adoption of modern solutions to overcome existing and upcoming challenges. We appreciate the government's approachability, which is allowing for faster growth of the industry".

"India is heading down a new path to success



and we are glad to be collaborating closely with the industry. The government will take cognizance of all innovations highlighted by technical experts. The achievements of this industry are building up the nation," said **Parshottam Rupala, Minister of Fisheries, Animal Husbandry and Dairying (AHD) department, Govt. of India** in his address as the Chief Guest at the Symposium.

He recommended implementing waste-to-wealth strategies for the disposal of dead animals. He added that the government is considering PPP (public-private-partnership) models for animal health in alignment with India's One Health vision.

This was followed by the CLFMA Award Ceremony. The Famous CLFMA awards were given to two leaders, who had diligently worked and contributed to the development of the livestock sector. The Life Time Achievement awards were presented to **Er. Anand Menon, FIE**, who had contributed a lot to the livestock sector, during his glorious forty years of service as CGM, KSEL, Kerala and CLFMA Award was presented to **Dr Rudra Nath Chatterjee, Director ICAR-Directorate of Poultry Research, Hyderabad**



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for their marvelous contribution to the Indian Livestock Sector. CLFMA Chairman congratulated all the CLFMA award winners.

**Balram Singh Yadav, Managing Director of Godrej Agrovet**, presented the journey of the industry, highlighting data on growth in production and efficiency over the last two decades. He shared the optimism of the industry, reflected in a CAGR of 7.5% this year. "The next decade is going to be explosive. Investments in animal husbandry will outstrip any industry. Our contribution to agriculture GDP will grow from 37% to 50% in the next 5-6 years," he said.



**Jatindra Nath Swain (Secretary Fy.)** said consumer demand is shifting to animal proteins, with a projected 4x rise in consumption by 2047. He urged the participants to adopt sustainable solutions to water and electricity consumption.



An industry survey report was also released on the occasion, followed by a vote of thanks by **Divya Kumar Gulati, Deputy Chairman, CLFMA of India.**

Cultural Event and Networking Dinner was enjoyed by all participants.



Day two of the Symposium began with the Welcome Address by Mr Neeraj Kumar Srivastava, Chairman, CLFMA of India. The first session brought up technology solutions with a focus on data and analytics. "Mitigating the challenges of price escalations of feed ingredients" was moderated by **Amit Saraogi, Managing Director of Sarawagi Agrovet.** "Our industry

has seen unprecedented price hikes for crops like soybean and corn. There is a strong need for unbiased and robust data to prevent unfavourable situations from repeating."

**RMSI Cropalytics' Kumarjit Mazumder** shared a glimpse of the methodologies of their digital crop map tool. It uses satellite images to capture plots of standing crops.



A price outlook on relevant commodities like soymeal, mustard cake, cottonseed oil cake, bajra and maize was revealed by **Prerana Desai, head of research at Samunnati Agri.** She shared observations on the impact of feed substitution, margin pressures and global macroeconomic trends.

**Kevin M. Roepke** from USSEC talked about 'Chickenomics' with a comparison of India and Sri Lanka. He brought out the increase in USA crush capacity driven by the adoption of renewable fuel policies.



**Hemant Bansal of Patanjali Foods**, representing the Indian Vegetable Oil Producers Association, maintained that prices of crop feed need to be at a reasonable range to guarantee the sustainability of the ecosystem.



Building customer experiences, adopting innovation in branding and hyper-localizing for the domestic market were key call-outs from industry leaders participating in a panel discussion on go-to-market strategies for the livestock industry. The session was moderated by **Balram Singh Yadav, Managing Director of Godrej Agrovet.**

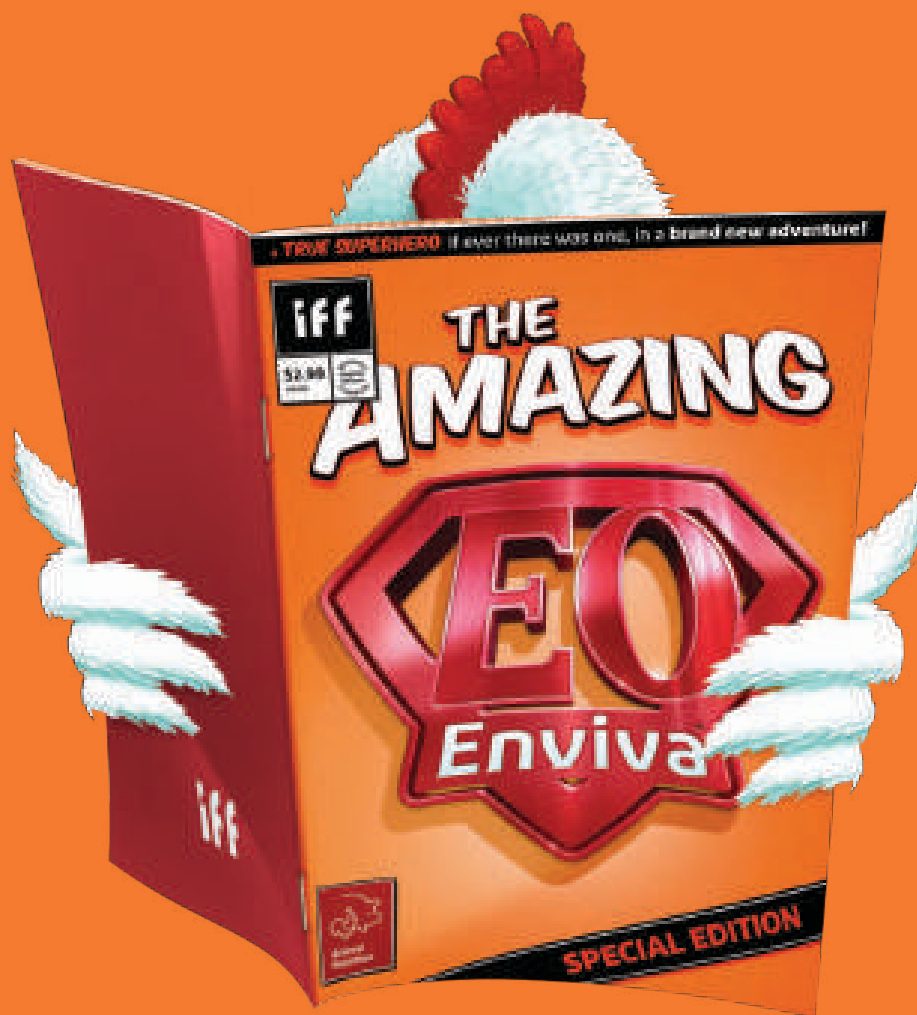


A view of cultural programme held on the occasion



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**Dan Meagher, President and CEO of Novus International**, said, “The power of branding is very important. Processing of animal products is going to create a new customer experience. Brands are going to differentiate at the customer level.” **Suguna Group’s Soundararajan**.



Entrepreneur, **Dr Manoj Sharma of Mayank Aquaculture** shared their respective learnings from the poultry and shrimp sectors for the benefit of participants of the forum.

**Bhupendra Suri of Creamline Dairy** said, “The idea of private players in



value-added categories like ghee, paneer and curd is rising fast, with opportunities for new categories like whey drinks.”



In the final session, **Dr Parminder Singh, Professor of Animal Nutrition at Guru Angad Dev Veterinary and Animal Sciences University**, brought up the lacunae in the system. He spoke about technical challenges faced by livestock breeders in implementing standards.



Government representatives **Dr Amit Sharma of the Food Safety and Standards Authority of India (FSSAI)** and **Amit Choudhary of the Bureau of Indian Standards (BIS)** invited participants to liaise and get involved in developing and amending standards. Highlighting the challenges with verification of reports of milk contamination, **Dr Raghavendra Bhatta, Director of the National**

**Institute of Animal Nutrition and Physiology**, said, “There is a need for scientific sampling with state-of-the-art laboratories set up to prevent non-compliance.”

The session was moderated by **Dr P.S. Mahesh, Joint Commissioner and Director of Central Poultry Development Organisation and Training Institute, Govt. of India**. He encouraged members to approach and engage with the government’s representatives for a better future.

Concluding the symposium, **Mr Tarun Shridhar, Former Secretary, AHD**, advised, “Rather than offering subsidies, an enabling policy environment and infrastructure support will nurture entrepreneurs and promote growth. We need to capitalize on our vast land resources, address our



productivity issues and plan for changing consumer demands. We must also guard against misleading advertisements. Digitalizing and having a consolidated voice for the industry will be vital going forward.”

CLFMA offered Mementos to Sponsors, Government Officials, Special Invitees, Moderators, Speakers, Associations, Press, Event Management Company, etc. as a token



of appreciation for their continual support as always.

Mr Suresh Deora proposed the vote of thanks, sharing gratitude to the government representatives, speakers, sponsors, industry stakeholders, special invitees and attendees for their active participation.

The networking Dinner was enjoyed by all participants.

Overall, CLFMA interacted with various stakeholders in the industry and government on the topic



Changing Dynamics of Animal Agriculture in India. The association has diverse membership from across the animal protein value chain including feed manufacturing; poultry, dairy, and aquaculture business; animal nutrition and health, veterinary services, machinery and equipment; processing, distribution, and retailing of meat. The program was well appreciated by all the participants.





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## "Research is creating new knowledge"- Neil Armstrong



**Dr R.N. Chatterjee, Director, Directorate of Poultry research, ICAR and Dr Prasad Kulkarni, Director, Biosint Nutraceuticals exchanging the research agreement copies.**



**Dr Shanmugam M, Senior Scientist, Directorate of Poultry research introducing the research set up in the facility at directorate of Poultry research ICAR – Rajendranagar, Hyderabad to Dr Prasad Kulkarni, Director, Biosint Nutraceuticals.**

### Pune: "Biosint

**Nutraceuticals"** has established its state of art R&D facility for field the trials of their products from last 18 years as a unit under firm known as A & L life sciences. For the new innovative product line Biosint Nutraceuticals collaborates the research work with Directorate of Poultry Research, Indian Council of Agricultural Research (ICAR). PDP under ICAR at Rajendranagar is the renowned institution known for research in the field of poultry genetics, nutrition and health.

**Dr Prasad Kulkarni** on behalf of Biosint Nutraceuticals formally signed to exchange the agreement copies at Hyderabad facility under guidelines of **Dr R.N. Chatterjee, Dr S.V. Rama Rao, Dr M.R. Reddy, Dr Shanmugam M and Dr Ravi Pachaiyappan** at the Hyderabad facility.

The project is initiated with

support of **Dr S.V. Rama Rao**, Principal Scientist (Nutrition), Directorate of Poultry research ICAR-Rajendranagar, Hyderabad.

**Dr R.N. Chatterjee**, Director-Directorate of Poultry research ICAR-Rajendranagar, Hyderabad said that "this Industry-Academic collaboration will continue its research throughout the year for developing innovative concept that can support poultry producers to

increase their income. This is just a beginning of supporting the rural economy".

**Dr Ravi Pachaiyappan**, Founder and Director, Biosint Nutraceuticals explained that "research remained philosophy of the organization since inception, further its continence is now possible through such technocratic institutional collaborations. The facility is unique and perfect place to undertake

research projects on genetics, nutrition and health".

**Dr Prasad Kulkarni**, Director, Biosint Nutraceuticals explained that "only innovative & research-based speciality product solutions can support today's price sensitive farming business. It's logical that these product solutions must be time tested and address real challenging part of poultry farming, like immunity and productivity. This collaboration is the perfect roadmap of developing specific product solutions which really today's farming business demands. This is the right stage set for the innovation that the poultry industry in India needs today".

The research is supported by Principal Scientist, **Dr M.R. Reddy** who has extensive experience in the field of immunology, pathology and disease surveillance.

The research project is driven by the team lead by Senior Scientist **Dr Shanmugam M**, having rich research experience of more than 15 years with the expertise in the field of avian fertility.



**Research team lead by Dr Shanmugam M, Senior Scientist, Directorate of Poultry research with Dr M.R. Reddy, Principal Scientist, Directorate of Poultry research along with Director, Dr R.N. Chatterjee and Dr Prasad Kulkarni during the event.**



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# Food Safety & Food Quality through One Health Approach

*Knowledge seminar organised by KFPBA in association with Sapience Agribusiness Consulting*



**Dr G.B. Putanaiah, speaking on the importance of preserving our interconnected ecosystems and the need to understand emerging diseases in Poultry Farming**

## Bengaluru:

### One Health & the nature of interconnectedness

The Karnataka Poultry Farmers & Breeders Association was proud to associate with Sapience Agribusiness Consulting in organising a knowledge session on 20th October 2022 at Courtyard by Marriott in Hebbal, Bengaluru. The theme of the knowledge event was **One Health and the nature of interconnectedness** between Human Health, Animal Health and The Environment.

The esteemed speakers and panellists enlightened the audience about the One Health approach to achieve optimal health outcomes by recognising the interdependence and the fragile balance between people, animals, plants, and their shared environment. And at the end of the seminar, the audience was better

informed on impact issues, such as the prudent use of antibiotics and the trickle-down effect of antimicrobial residues in animals on human health.

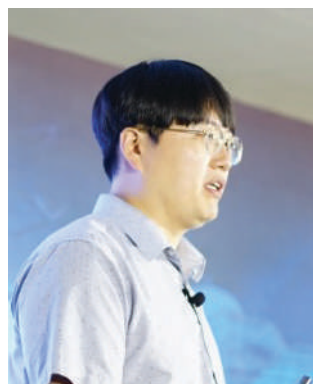
Dr Sushant Rai, President of KFPBA, brought the meeting to order and established the significance and importance of the knowledge session's



**Prashant Kumar, Director, Sapience Agribusiness hosting the event**

theme. Mr Prashant Kumar, Director, Sapience hosted the event and kick started the programme with an overview of One Health.

Dr G.B. Putanaiah, Chairman of the technical



**Edgar Shin, Introducing Xcelcio, a feed additive prophylactic replacement to AGP**

committee of KFPBA, provided a keen overview of the session and drew attention to the importance of working together to preserve our interconnected ecosystems and the need to understand emerging diseases in poultry farming. He then asserted the need to evaluate and prudently use antibiotic alternatives, such as bacteriophages.

### The need for safe poultry production

The first keynote

speaker was Dr Raman Muthuswamy. Dr Raman is a professor and former head of parasitology at TANUVAS. He was also the national coordinator at the UK Research and Innovation Programme for One Health representing poultry in India. Dr Raman spoke on the need for safe poultry production, the importance of prudent usage of antimicrobials and the relevance of the One Health programme. In addition, Dr Raman discussed the importance of feed quality control and summarised the drivers of quality control of poultry feed in achieving food safety and quality.



**Dr Raman Muthuswamy, speaking on the safe poultry production, the importance of prudent usage of antimicrobials and the relevance of one Health programme**



**Panel of discussion on One Health followed by Keynote moderated by Dr Mahesh Subhash Patlapati**





## Natural Feed Additive

### Salmonella Infantis in broilers and the impending food safety issues

The second keynote speaker was Dr Filip Van Immerseel. Dr Filip is a Research Professor at the University of Ghent and the head of the gut health team at Ghent. An authority on bacterial intestinal challenges in broilers and breeders, Dr Filip, spoke on the dominant strains of Salmonella and their impact on food safety and, importantly, threw light on emergent strains such as Salmonella Infantis in broilers and the impending food safety issues in the context of One Health.

Dr Filip went on to outline the impact of Clostridium Perfringens and Staphylococcus Aureus on broiler health and the various nutritional strategies as alternatives to antibiotics to facilitate gut health. Dr Filip also spoke about butyrates and bacteriophages as effective replacements to antibiotics to maintain gut microbiota equilibrium.

### Impact of bacteriophages – an effective prophylactic replacement to AGPs

The third keynote speaker was Edgar Shin, CEO of CTC Global. CTC Global is at the forefront of bacteriophage research and its application in animal health. First, Edgar introduced Xcelsio, a feed additive bacteriophage which is an effective

prophylactic replacement to AGPs. Next, he explained in detail the lytic mode of action of bacteriophages. Finally, rounding off his presentation, Edgar presented the global research studies on the impact of bacteriophages on various strains of E. Coli, Salmonella, C. Perfringens and S. Aureus.

### Panel discussion on One Health

A panel discussion on One Health followed the keynotes. The panellists were Dr Giridhar Gopala (a medical doctor who works with the One Health Trust, USA), Prof A. Natarajan (a professor of animal nutrition who heads the animal feed analytical and quality assurance laboratory at Namakkal Veterinary college), Dr Raman Muthuswamy, Edgar Shin, and Dr Gopi M (NIANP). The panel discussion was moderated by Dr Mahesh Subhash Patlapati, who serves as the joint commissioner and Director of CPDO&TI, Gol.

Dr Mahesh spoke about the interconnected nature between human health, the environment and animals and how, at the global level, four organisations, UNEO, FAO, WHO and WOAHA (formerly OIE) are coming together to understand and find measures to attain One Health.

Dr Giridhar Gopal, who represents the One

Health Trust, a global think-tank on AMR, spoke of the importance of understanding the various drivers of a silent killer, i.e., Antimicrobial Resistance in humans and how AMR will soon be the largest cause of death in humans. He spoke of integrating the three sectors working in different silos—Human Health, Animal Health, and the Environment.

Dr A. Natarajan spoke from an animal nutrition perspective. He informed the audience of how feed quality causes gut health problems, leading to higher antibiotic usage. He then implored the need to focus on high-quality feed ingredients and high-quality feed as an input measure to reduce antibiotic use in animals. Through his primary research on AMR, Dr Gopi highlighted the alarming growth of antimicrobial resistance and espoused the need, as an industry, to gear up with measures cutting down antibiotic use dramatically.



**Dr Rajaram, General Manager, Sapience Agribusiness delivering the vote of thanks.**

In their closing remarks, Dr Raman highlighted the need for biosecurity. Edgar remarked on the importance and need to use alternatives such as bacteriophages, which he called nature's solution to AMR. And Dr Natarajan reinforced that antibiotics need not be used in the feed and categorically stated that antibiotics, at low levels, as in the case of AGPs, do not work.

The vote of thanks was delivered by Dr T. Rajaram, General Manager, Sapience.

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# Less for more - Technical Seminar held by Valvin Nutraceuticals at Hyderabad & Karimnagar



**Ravi Neralla, Technical Director, Valvin Nutraceuticals presenting Less for more in Mineral Management**

**Bengaluru:** On 28th and 29th October 2022, Valvin Nutraceuticals held its first technical

seminar in Hyderabad and Karimnagar, Telangana. Over 200 participants from the poultry industry attended the technical conference, including poultry farmers, breeders, integrators, veterinarians and business leaders.

The technical seminar began at 8:00 pm. In his welcome address, Mr Pavan Moova, Director -Operations at Valvin Nutraceuticals, highlighted how important is mineral nutrition in poultry and specifically organic trace minerals.



**Dr Jayaraman Krishnarajan, Chief Consultant, presenting Less for more Mineral Nutrition at Hyderabad and Karimnagar Technical Seminar**

In the keynote address, Mr Ravindra Neralla, Director – Technical at

Valvin Nutraceuticals, highlighted Valvin's business since its inception in 2005 in the business of animal health and nutrition and has grown strength to strength organically mainly to unwavering commitment to developing and commercializing nutritional solutions for the animal feed industry. He underlined the significance of Valvin's VPC program (Value, Price and Cost) that could overcome challenges in the market with it though its unique solutions that is supported through its quality program, cost effective means that eventually provides sustainable solutions to customers. He also emphasized various Valvin Organic Trace Mineral (OTM's) offerings solutions under the brand of Sakthi.

In the guest note address, Dr Jayaraman Krishnarajan, Chief Consultant, Pune presented to the audience about Less for More – Mineral Management



**From left to right: Ravi Neralla – Technical Director, K. Venugopal Rao with Mrs Surekha Venugopal – SV Marketing, Dr Saikia, Chief Veterinary Officer – Srinivasa Farms and Tejasujith – Business Head India & Exports.**



**From left to right: Tejasujith, Business Head India & Exports with Dr Ravindhra - Karimnagar felicitation to Dr Jayaraman – Chief Consultant**



**Karimnagar, Siddipet, Armor farmers group photo with Valvin Sales Team**





From left to right: **Venkat Rao – Pathuri Farms, D.V. Rao – Kohinoor Hatcheries, Dr Jayaraman – Chief Consultant and Siva Santh Kumar Ragala – Prasanthi Breeders.**

& Nutrition in Poultry. Practically explaining his vast experience and research data that shows what should a farmer be aware of when he looks at choosing trace minerals. How inorganic and organic plays a role in absorption, bio availability and significance of elemental value. Dr Jayaraman also cleared come of the myth associated with mineral levels and the standards

used in Layers, Broilers and Breeders.

Following the guest note address, Mr Teja Sujith, Business Head Sales at Valvin Nutraceuticals felicitated with bouquet Dr Jayaraman, Mrs Surekha Venugopal at S V Marketing and Dr Raveendran.

Mr Teja Sujith, Business Head at Valvin Nutraceuticals proposed a vote of gratitude.



From left to right: **Ramakrishna – Vijaya Sai Agencies, Harsha – LV Farms, Gopla Krishna – Sai Enterprises and Sinivas – SRP Farms.**



**Tejasujith – Business Head and Pavan Movva – Director Operations felicitating Dr Jayaraman Krishnarajan (in the middle) at Valvin Technical seminar at Hyderabad.**



**Tejasujith – Business Head felicitating to Mrs Surekha Venugopal – SV Marketing**



**Breeder, layer & Broiler Farmers gathering at Karimnagar Valvin Technical Seminar**



**Hyderabad Farmers group photo with Valvin Nutraceuticals Sales Team**



## Minister inaugurates state-of-the-art Poultry Training Center & Diagnostic Lab in Bengaluru



*From left to right: Dr K. C. Veeranna, Vice-Chancellor, KVAFSU, Bidar, Prabhu Bamala Chauhan, Hon'ble Minister for Animal Husbandry & Fisheries, Govt of Karnataka, Govindaraju, Hon'ble Member of Legislative Council, Govt of Karnataka and Dr Sushanth Rai B, President, KPFBA*

**Bengaluru:** The Karnataka Poultry Farmers and Breeders Association (KPFBA) and the Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU) jointly have set up one of its kind state-of-the-art Poultry Training Center & Diagnostic Laboratory in Bengaluru on 25 August 2022. The Lab housed in KVAFSU campus will do pioneering research to do with promotion of poultry health.

Inaugurating the Center, the Minister for Animal Husbandry & Fisheries, Mr Prabhu Bamala Chavan assured the poultry sector that he would help remove any hurdles in the growth of the sector. Commending

the Center for investment in modern technologies, he said the contribution of animal husbandry and fisheries to the GDP was growing.

### Free courses for farmers and students

The Vice Chancellor of KVAFSU, Dr K.C. Veeranna said that students of KVAFSU would be using the lab for research as

this has specialized and most modern equipment. Also two batches of 30 farmers each will be undergoing training in poultry farm management and healthcare at the Center. A memorandum of understanding (MoU) was signed between KVAFSU and KPFBA on this wherein the latter will run the courses, free of charge for farmers and students.

The KPFBA President, Dr B. Sushanth Rai said, the laboratory equipped with ultra modern sophisticated equipment will help the poultry community in the state and elsewhere in monitoring disease outbreak as well work on managing the same. One of the features of the Lab is going to be its easy accessibility the poultry farmers who can get tests done here to confirm of any disease that may or may not have affected the farm. Thus, he added, would lead to better and efficient farm management practices and help in reducing chicken mortality rate.



*Inaugurating of the Dr G.B Puttannaiah Learning Center during the inauguration of KVAFSU-KPFBA Poultry Training Center and Diagnostic Laboratory in Bengaluru*



Dr Sushanth Rai said, the Lab and the Training Center will have the best of equipment and will be headed by Dr B. Umakantha, a retired Scientist of Poultry Science, Veterinary College, Hebbal. The Lab will have three sections – Microbiology, Pathology and Nutrition. The Lab and the Training Center is another fine example of academia and industry coming together to take the poultry sector to the next level.



Felicitating of Prabhu B. Chauhan, Hon'ble Minister for Animal Husbandry & Fisheries, Govt of Karnataka, on the occasion of the KVAFSU-KPFBA Poultry Training Center & Diagnostic Laboratory inauguration  
From left to right: Inayath Ulla Khan, Executive Secretary, KPFBA, Dr K. C. Veeranna, Vice-Chancellor, KVAFSU, Bidar, Govindaraju, Hon'ble MLC, Govt of Karnataka, Prabhu B. Chauhan, Hon'ble Minister for Animal Husbandry & Fisheries, Govt of Karnataka, Dr Manjunath S. Palegar, Director, Dept of Animal Husbandry, Dr Sushanth Rai B, President, KPFBA and Dr K. Satyanarayan, President, KVC



M.R.I Magdum – General Manager, VHPL addressing the gathering on the occasion of the KVAFSU-KPFBA Poultry Training Center & Diagnostic Laboratory inauguration

### Glimpses of inauguration of 'KVAFSU – KPFBA Poultry Training Center & Diagnostic Laboratory' held on 25th August 2022 in Bengaluru



KPFBA Staff felicitating M.A. Nazeer, Editor and Publisher, Poultry Fortune, English monthly magazine, during his visit to KPFBA office in Bangalore on October 21, 2022

From left to right: Sagar Ganiger – Manager Accounts & Admin, Inayath Ulla Khan – Executive Secretary, KPFBA, M.A. Nazeer – Editor and Publisher, Poultry Fortune, Dr Umakantha.B – Scientist, KVAFSU-KPFBA Poultry Training Center & Diagnostic Laboratory, Sanjeev Manoj Kumar - Senior Manager Sales (Single Window).







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# Novus continues to grow and change to meet the needs of the industry

**Novus is among the top players in the organic trace mineral and enzyme segments in India. Due to the increasing awareness around anti-microbial resistance worldwide and consumer and regulatory pressures to limit the use of antibiotic growth promoters in animal production, there's an increased focus on improving gut health and immunity. Editor Poultry Fortune, M.A. Nazeer had an exclusive interview with Mr Dan Meagher, President & CEO, Novus International, Inc. Excerpts:**



Dan Meagher, President & CEO,  
Novus International, Inc.

**Poultry Fortune: Is this your first visit to India? How was your trip to India and your meetings with stakeholders of the poultry and livestock industry in India?**

**Mr Dan Meagher:** This was not my first trip to India, but it had been 11-12 years since my last visit. This was a great trip for me to see the developing market transformation first-hand. I had great meetings with stakeholders, and discussions around the importance of emerging technologies (genetics, production systems, data, digital connection, etc.), nutrition and health, consumer brand development, retail store development, and consumer product development. I even had the opportunity to eat and experience directly what India's innovative companies are developing. It is very exciting to see where the India market is moving to and share my own experiences and background to aid in attaining the vision of the many impressive people I met with.

**PF: How is Novus doing globally? Which part of the globe you are strong in business achievement?**

**Dan:** As a company, Novus continues to grow and change to meet the needs of the industry and our customers globally. Our strengths lie in the efficacy of our science-based products, including our unique offerings like MINTREX® bis-

chelated trace minerals, which include methionine value through HMTBa.

**PF: Which are the segments of the livestock (Poultry/Aquaculture/Dairy) industry Novus has its products and services?**

**Dan:** Our primary focus is poultry, swine, and dairy. Our solutions for these protein animals include bis-chelated trace minerals, organic acids, essential oils, acidifiers, enzymes, and dry and liquid methionine.

**PF: How are the global trends in poultry development and what is Novus International's role in the poultry sector and its contribution to the sector?**

**Dan:** The trends important to our customers include optimizing animal performance/pounds or kilos of meat produced, feed cost reduction/enhancing nutrient utilization in raw feedstuffs, antibiotic-free production, and environmental impact/industry sustainability. Novus has a variety of solutions and services to support customers as they endeavor to meet their goals in these areas.

**PF: What are your future plans and targets for India and globally in poultry?**

**Dan:** Novus is among the top players in the organic trace mineral and enzyme segments in India. Due to the

increasing awareness around anti-microbial resistance worldwide and consumer and regulatory pressures to limit the use of antibiotic growth promoters in animal production, there's an increased focus on improving gut health and immunity. Our diverse product offerings, which are supported by extensive research, make Novus well-positioned to support our customers in these areas.

Like many in our industry, sustainability is a priority for us. In improving reproductive strength and structural integrity in poultry breeders, our products can help reduce mineral and nitrogen excretion, and support antibiotic-reduced/free production while seeing similar and even improved performance. This fosters both environmental and operational sustainability.

**PF: What message do you have for Indian poultry stakeholders to have sustainable growth and development?**

**Dan:** Where sustainable growth is concerned, efficiency is key. Using precision farming to boost yield and adopting feeding programs that focus on improving gut health and immunity through functional ingredients like essential oils and feed enzymes can support sustainable livestock production.

The country is witnessing an increase in internet-based retail for livestock products like meat and eggs, which signifies a significant shift from wet markets to processed meat markets.

A multifaceted approach can help improve meat quality and meet consumer demands. Enhanced cold supply chain facilities to store and transport meat, improving packaging, and integrating value-added products that have a longer shelf life are some pieces of this approach.



## *Novus is very well received in India; Its a key player in the feed additive industry*

**PF: Is this your first visit to India ? How was your trip to India and your meetings with stakeholders of the poultry and livestock industry in India ?**

**Mr Eduardo Galo:** This was my first visit to India. I was very impressed with the hospitality, the high level of interactions, the food, the engagement from all stakeholders in industry discussions, and the high level of sophistication of the industry in general as the pursuit for increased per-capita consumption of animal proteins develops. There is a great opportunity in this market, that our company recognizes and has positioned itself to be a part of. This was a great visit where I had the privilege to meet with several leaders of industry who are operating very significant businesses that are vested in growing and transforming this market. We are very pleased to be part of this journey.

**PF: What are your observations about the poultry industry (Layer & Broiler) in India ?**

**Eduardo:** India is a growing market with huge upside. Per capita consumption of eggs and chicken meat is still low relative to global standards but growing at a fast pace. The emerging middle class supports this trend as we see in most of the markets in Asia. This market, with meat consumption in a steady growth pattern, provides great opportunities for Novus to work with producers who want to use nutrition to positively impact animal health and performance.

**PF: How is Novus performing in India ? Are you satisfied with its business development and service to Indian**



**Eduardo Galo,**  
**Chief Commercial Officer and Senior Vice President, Novus International, Inc.**

**customers ? How are the customers responding to Novus in this country ?**

**Eduardo:** Novus is very well received in India, as we have been since 2005 when we opened our first office here. We are among the top players in the poultry segment and are leading the way in the use of organic trace minerals and enzymes. Leveraging our diverse product offerings, global expertise, and technical capabilities, we are currently focused on helping customers improve the gut health, immunity and meat quality of their birds.

The dairy segment in India is an area of opportunity. We've already begun working with dairy producers to help them become more efficient and profitable by strategically managing feed costs and showing them how feed additives can optimize milk yield and components, improve reproductive performance, reduce the incidences

of lameness and mastitis, and reduce somatic cell counts.

**PF: What kind of products Novus has for Poultry ?**

**Eduardo:** Our products include MINTREX® bis-chelated trace minerals to aid in meat quality, egg/chick production, and skeletal/skin development; CIBENZA® enzyme feed additives that aid in feed cost reduction, NEXT ENHANCE® feed additive and AVIMATRIX® feed supplement are eubiotics products that support gut health, and our liquid and dry methionine sources, ALIMET® feed supplement and MHA® feed supplement.

**PF: What is the position of Novus in its market size globally and in India ?**

**Eduardo:** Novus is a key player in the feed additive industry. The extensive experience of our global sales and technical service teams, coupled with the external partnerships we've developed over three decades, make us a powerful and knowledgeable partner for our customers.

**PF: What do you feel about the importance of antibiotic-free health and nutrition care products in the poultry and livestock sector ?**

**Eduardo:** Not every customer globally is concerned about antibiotic-free or antibiotic-reduced production, but we live in a global economy. Antibiotic reduction is a necessity in many markets due to regulations. As economies develop and consumer buying power increases, the demand for ABF animal protein will continue to grow with it.



**A view of Novus Arkansas Plant**





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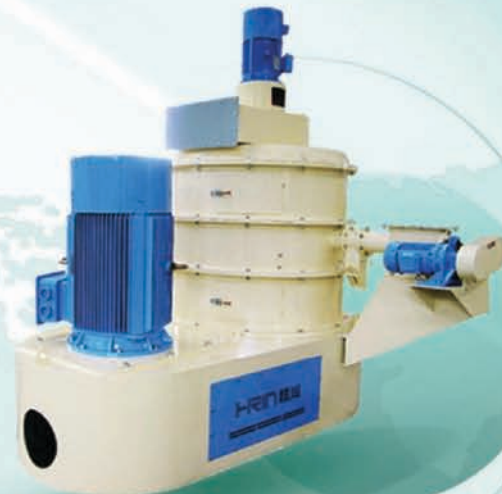


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# Types, nutrition, health advantages and negative effects of eggs

Email: ram\_vetdoc@rediffmail.com

**Dr Rambabu.D**

Associate Professor, Dept. of Poultry Science,  
College of Veterinary Science, Korutla, PV  
Narsimha Rao Telangana Veterinary University,  
Jagtial District, Telangana.

## Highlight Points

An egg is the best super food in the planet. It helps you stay healthy and fend against chronic illnesses because of its complete protein content, abundance in vital vitamins, and other antioxidants. Because they are a source of complete protein and include all nine essential amino acids as well as important vitamins, eggs are one of the world's most nutrient-dense foods. Eggs are strongly recommended by doctors and nutritionists as a necessary component of a balanced diet. The least expensive protein sources that can be transformed into a healthy meal are those that are of excellent quality and low cost. The egg is recognised as a super food that shields the body against disease.

## Introduction

Eggs are one of the world's most nutrient-dense foods because they contain all nine essential amino acids and key vitamins, making them a source of complete protein. An egg is a great source of practically all the nutrients you need to stay healthy, including proteins, vitamins, and minerals. The basic ingredients needed to transform a single cell into a young chick are all present in a whole egg.

The majority of us enjoy eating eggs, which may be prepared in a variety of delectable ways and consumed for breakfast, lunch, dinner or even brunch. Eggs prepared in any way, including boiled, poached, omelette and scrambled, include all the essential elements needed to keep the body in good shape. It can be cooked or combined with a variety of ingredients to create a flexible and delectable treat.

Doctors and nutritionists highly advocate eggs as an essential part of a balanced diet. The cheapest sources of protein that can be turned into a wholesome meal are those that are high in quality and inexpensive in price. The egg is also regarded as a super food that prevents illness.

There have recently been some misconceptions concerning the cholesterol and fat content of egg yolks and their potential health benefits. The truth is that high lipid profile individuals, such as those with heart and cardiac issues, are not advised to consume eggs due to their sensitivity. However, for average people, eggs can be a fantastic food and help them live better lives. Including eggs in your diet provides a quality protein source, enhances brain and eye health, protects skin from UV radiation, raises good cholesterol and supports cognitive function.

There are many different kinds of edible, nutrient-rich bird eggs that are commonly consumed around the world. One of the typical edible eggs that is frequently ingested by people due to its outstanding health benefits is the chicken egg.

## Different Eggs

### Poultry egg

The most popular and extensively consumed form of egg is chicken, which is easily accessible in markets. Generally speaking, it comes in two colours: white and brown, depending on the type of bird. Both eggs taste pretty mild and are high in protein, vitamins, calcium, and zinc. Based on the yolk, colour and size, chicken eggs come in a variety of shapes and sizes.

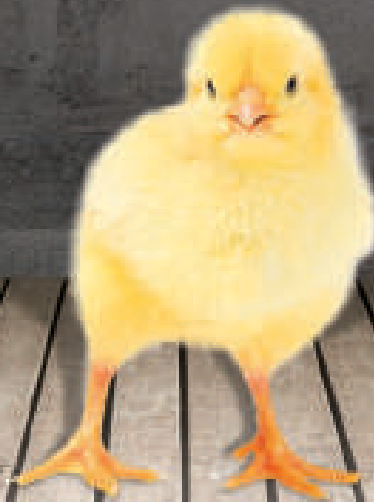
Double eggs are those that have an egg with a shell and an egg without a shell around them in the oviduct, with the outer egg developing a shell as well. The egg may appear particularly huge in the shell and typically has an egg white with two or more yolks.

Egg white is the only component of a yolkless or no-yolker egg, a dwarf egg, or a wind egg. An egg may occasionally hatch with an irregularly shaped, rough or typically coloured shell.

The breed, age, and weight of the hen all affect egg size. Banty breeds produce smaller eggs while larger chicken varieties produce larger ones. But older hens typically produce bigger eggs than younger ones.



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\*Natural as defined by the American Association of Animal Feed Company Officials



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## Various Types of Chicken Eggs

### Natural eggs

Organic eggs are produced using only organic feeds and are hormone- and antibiotic-free. Pesticides, fertilisers, synthetic hormones, and antibiotics are not included in their meals. According to the United States Department of Agriculture, organic means the chickens cannot be grown in cages and must have access to outside pastures.

### Traditional Eggs

The easily accessible conventional or inorganic eggs come from chickens that are typically reared in cages and never see the light of day. They are given grain-based food as well as vitamins, minerals, antibiotics and hormones as supplements.

Pastured Eggs Chickens are free to roam and eat a variety of natural and commercial feed, as well as plants, insects and worms.

### Eggs fortified with omega 3

Except for the addition of omega-3-rich diets like flax seeds and access to the outdoors, these chickens are typical in every way.

### What Separates Brown and White Eggs

White-feathered hens with white earlobes lay white eggs, while brown-feathered chickens with red earlobes lay brown eggs. White eggs are less expensive than brown eggs because they are raised and bred at a lower cost. Additionally, brown eggs are more expensive since they cost more to feed because they consume more. Regarding nutrients, there is no distinction between brown and white eggs.

### Nutritional Information on Eggs

Eggs have long been a staple of a healthy, balanced diet. Because of all the health advantages, eggs are regarded as a true super food because they contain an abundance of minerals. There are uncountable therapeutic and medical advantages to eating eggs every day. In addition to being a source of complete protein, they also include omega 3 fatty acids, antioxidants, and 11 vital vitamins and minerals. Eggs significantly contribute to meeting daily nutrient needs.

### High in Protein Quality

The building blocks of life, protein is necessary for healthy growth, tissue repair, and muscular building. The amount of high-quality protein in one egg is roughly 6.3 grammes, and it also provides all nine of the essential amino acids in the proper ratios for maintaining good health.

### Suitable Omega-3 Source

Polyunsaturated and monounsaturated fatty acids make up the vital fatty acid class known as omega 3 fatty acids, which are crucial for maintaining healthy cells. Other than oily fish, eggs are one of the richest providers of omega 3 fatty acids, which are important for protecting eyes, heart, and brain health. The nutrients in one medium-sized egg at a serving size of 44 grammes are as follows. The information is in accordance with the nutrition labelling guidelines for produce set forth by the United States Food and Drug Administration (US FDA).

### Macronutrients

Saturated Fat 1.5g 8%, Total Fat 4g 5%

Polyunsaturated fat: 1g, monounsaturated fat: 1.5g, trans fat: 0g

165 mg of cholesterol 55%

0% 0g Total Carbohydrate

Nutritional Fiber 0g 0%

Protein 6g Total Sugars 0g 12%

### Micronutrients

Vitamin D is 0.9 mcg, Vitamin A is 70 mcg, Vitamin B2 is 8%, Bifidol 0.2 mg 15% Niacin (vitamin B3) 1.3 mg 8 percent B6 0.1 mg of pyridoxine Methylcobalamine 0.4mcg 6% Vitamin B12 15% Vitamin E 0.5mg 20% DFE of vitamin B9 at 4% 6%, B5 vitamin 0.7 milligrammes of pantothenic acid 15% B7 vitamin Choline 130 mg 25% Biotin 9 mcg.

### Minerals

30 mg calcium 0.8mg Iron at 2% 60% sodium at 4% 60mg of 3% potassium 90mg Phosphorus, 0% 24mcg of 8% iodine. Zinc 15%, 0.6 mg 14mcg of selenium at 6%.

Both the egg yolk and the egg white contain enormous amounts of proteins. Eggs are also a super food because they contain all the necessary nutrients and amino acids, making them the ideal supplement to a healthy breakfast. They provide essential trace minerals like selenium, calcium, iron, phosphorus, and zinc. Important vitamins including vitamin A, the B vitamins and vitamin D are also abundant in them.

### Alternative Egg Types

Other edible bird egg varieties exist, each with a unique nutritional profile and flavor.

#### 1. Quail Egg

Eggs from the quail bird are known as “quail eggs,” which are smaller, lighter and have dots all over their shells than chicken eggs. Quail eggs are healthier and more nutrient-dense than chicken eggs. It is rich in B complex vitamins, particularly thiamine (about 140% of vitamin B1) and vitamin D, and contains nearly 13% more protein than the recommended daily requirement.

Quail eggs enhance vision, skin health, memory, brain function, reduce the ageing process and stimulate the immune system.

#### 2. Duck Egg

With a little larger yolk, duck eggs are essentially identical to chicken eggs in appearance. In comparison to chicken eggs, it has more protein, healthy fats, cholesterol and vitamins B, D, and E. It also has a harder shell and a longer shelf life.

Duck eggs enhance vision, skin and hair health, reduce the risk of heart disease and cancer, strengthen the immune system, safeguard the liver and function effectively as a strong antioxidant.

#### 3. Turkey Egg

Regarding size and flavour, turkey eggs are remarkably similar to duck eggs. Its thick yolk and egg white give it a rich flavour and creamier texture. Turkeys lay an average





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of 100 eggs annually, most of which are used by farmers for reproduction, hence they are less common than chicken eggs. Compared to chicken eggs, turkey eggs include 50 times more calories and fat, as well as a wealth of important vitamins and minerals.

Turkey eggs aid in the development of lean muscle mass, support eye and skin health, improve memory and immunity, slow the ageing process and reduce the risk of degenerative nervous illnesses.

#### **4. Goose Egg**

Goose eggs are nearly twice as large, heavier, have a better flavour and contain more protein than chicken eggs. It has a tougher shell, 19.9 g of protein and is scarce because the goose lays just 40 eggs per week. It is also rich in calcium, phosphorus and zinc complex vitamins.

#### **5. EMU Egg**

EMU eggs weigh almost to 10 chicken eggs' worth, or approximately 1 kilogram, per egg. It contains separate layers, and the texture of the outer coating varies. It is minimal in calories and a fantastic source of nutrients.

#### **6. Ostrich Egg**

The heaviest bird eggs are ostrich eggs, which weigh roughly 1.3 kilogrammes or 20 times more than a chicken egg. One ostrich egg contains 2000 calories and has a much denser, more difficult-to-crack shell, yet it is similar in protein and fat content to chicken eggs. Ostrich eggs are seldom ever used as food; instead, they are utilized as a fertility treatment and for decoration.

### **Eggs' Health Benefits**

#### **1. Encourages Strong Growth**

A plentiful supply of high-quality proteins is eggs. They contain every important amino acid needed to develop strong tissues in all of the body's organs. Additionally, they play a role in important biochemical processes within the body, guaranteeing appropriate cell growth and development in essential organs including the heart and brain.

#### **2. Improves Cardiovascular Health**

Omega-3 fatty acids and healthy HDL cholesterol are naturally abundant in eggs. Additionally, they have very low levels of both dangerous triglycerides and poor LDL cholesterol. So, consuming one to two eggs every day can significantly improve heart health and lower risk of cardiovascular disease.

#### **3. Improves Eye Performance**

Egg yolks are a rich source of vitamin A, lutein and zeaxanthin, two powerful antioxidants. These substances have the ability to protect the eyes, helping to maintain eye precision into old age. Additionally, they guard against the development of cataracts, macular degeneration and other eye conditions.

#### **4. Enhances Brain Function**

Choline, a vitamin that is essential for the healthy operation of the nervous system, is abundant in eggs. In addition to enhancing cognition and lateral thinking, it improves

memory functions in the brain. Daily consumption of eggs in moderation lowers the risk of serious neurological diseases like Alzheimer's, dementia and brain tumours.

#### **5. Strengthens Immune System**

Eggs' naturally high levels of selenium and vitamin B12 aid in strengthening the body's defence mechanisms. Additionally, selenium possesses strong antioxidant properties that prevent the body's healthy cells from being damaged by dangerous free radicals. The body is protected from microbial infections and other seasonal epidemics like the flu, cold and fever by a healthy immune system.

#### **6. Makes Muscle Tissue Stronger**

Eggs' enormous protein content is extremely beneficial for promoting the growth and development of muscles. Additionally, eggs aid in the speedy regeneration of any damaged connective tissue in the body during times of injury, stress, or illness. One tiny egg each day increased muscle mass and enhanced flexibility, ensuring youngsters have strong and healthy muscles in all organs of body.

#### **7. Promotes a Healthier Pregnancy**

For pregnant women, eggs' abundance of folic acid and iron is particularly advantageous. Folic acid carries out a number of essential tasks, including ensuring the appropriate development of the baby inside the womb of the expectant mother and maintaining optimal red blood cell production and transport in the body along with iron. By preventing issues like neurological abnormalities like spina bifida in the unborn child or abnormally low blood circulation in the mother's body, moderate egg consumption enables expectant mothers to experience a safe pregnancy.

#### **8. Keeps body weight steady**

The abundance of protein in eggs aids in controlling and sating the appetite, eliminating irrational desires for unhealthy junk food. As proteins take longer to process and assimilate, it also aids in maintaining a healthy body weight by making the stomach feel full for longer. In the end, this enhances digestion and normalises bowel movements.

#### **9. Provides Enough Energy**

One medium egg contains 60 calories, making eggs a calorie-dense food. The body remains active as a result, greatly increasing output. Eggs are a great breakfast item because they give the brain cells an instant energy boost, which helps to improve mood, memory, and cognitive performance. They also provide muscle power, enabling speedier reactions and recovery from injury.

#### **10. Improves the texture of the skin**

Biotin, a B vitamin essential for healthy skin and strong hair, is naturally abundant in eggs. In addition to essential trace minerals like zinc and selenium, they are also endowed with vitamin D and vitamin B5, both of which aid in the regeneration of new skin cells. Therefore, regularly eating eggs dramatically lightens skin, giving it a youthful and vibrant appearance.

#### **11. Bone Tissues Are Strengthened**

Eggs are a great source of vitamin D, which strengthens connective tissue and contributes to

*Contd on Page 60*



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# Importance to improve first week body weight and reduce early chick mortality

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Product & Techno-Commercial Manager  
GLOCREST Pharmaceutical Pvt Ltd



**Dr Ramdas Kambale**  
CEO & Board Member  
GLOCREST Pharmaceutical Pvt Ltd

**“Well beginning is half done”** – Same is true for early life of chicks. First 10 days body weight has spring board effect to perform at the best till the end. Similarly, first 10 days body weight is equally important in layers and broiler chicks. Because first 10 days is very stressful time for baby chicks due to various factors.

At the same, time controlling early chick mortality (ECM) is extremely challenging in spite of the best management practices. Winter season on its way. Here, the control in early chick mortality is herculean task. Therefore, GLOCREST has introduced a complete solution to take care of all the challenges through a nutritional management.

The commonest causes of mortality found in the first 10 days were the stress factors like transportation, vaccination, omphalitis, yolk sac infections and septicaemia, E. coli and Enterococcus spp. Also, mortality occurs in weak chicks also due to managerial issues such as brooding temperature, access to feeder, drinker, space etc. Due to various such factors, ECM management and first 10 days body weight can be optimised with complete solution containing Vitamins / Minerals / Probiotics / Prebiotics / Anti-Stress MSM, Protein hydrolysate, Beta Glucan etc to boost the performance of chicks and improve the immunity of baby chicks.



Introduction of **GROX** by GLOCREST Pharma :

To overcome problem of early chick mortality, reduce stress in chicks and improve chicks body weight GLOCREST launched **GROX**, which contains Vit. A D3 EC along with other vitamins, Electrolytes, Probiotics, Protein Hydrolysate, Methyl sulfonyl Methane, Beta glucan and Mos.

- **Methyl Sulfonyl Methane (MSM):** MSM is typical anti-stress supplement which has many biological advantages. Dietary MSM in livestock production, including for chickens, has been increasingly investigated as stress controlling factor by ravaging the free radicals (primarily responsible for oxidative stress). It also works as an antimicrobial and immune modulator.
- **Vitamins:** Vitamins solution given through drinking water is directly available to chicks for normal body functions, growth and reproduction.
- **Electrolyte and Vit C:** While requirements for potassium, sodium, and chloride have been clearly defined, it is also important to maintain a balance of electrolytes in the body. Often termed electrolyte balance or acid-base balance, the effects of deficiency of any one element are often a consequence of alteration to this important balance as it affects osmoregulation. Vitamin C in poultry plays an important role in growth, strength and immunity of poultry.
- **MOS:** Mannan Oligo Saccharide is well known prebiotics and its functions especially during early stages, becomes extremely important to create the environment for beneficial microflora & predisposing factor for probiotics.
- **Probiotics:** Proper combination of probiotics like lactobacillus / Saccharomyces and Bacillus group becomes extremely beneficial to give the best gut health. They work faster in presence of MOS.
- **β-glucan:** It may be used as a replacement for dietary antibiotics in animal feeds to improve defense mechanism and boost the immunity consequently reducing mortality and enhancing growth.

*Contd on Page 60*





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# Single-Stage Incubation to Produce Top Quality Chicks

Email: [pradeep.kolte@jcmincubator.com](mailto:pradeep.kolte@jcmincubator.com)



**Pradeep G Kolte**  
Sales Manager – Asia,  
Jamesway Chickmaster Incubator.

## Highlight Points

Single stage machines can produce top quality chicks. Performance of these top-quality chicks is much better in terms of feed conversion efficiency and mortality, which will yield more meat. JCMI single stage machines are most energy efficient on the industry. Single stage machines can enhance biosecurity in upcoming disease challenges. Adoption of JCMI single stage technology will improve efficiency of operation, with better ROI improves bottom line.

It is true that good quality chicks can be achieved through both Multi-Stage & Single-Stage incubation. However, it is the difference between good quality chicks and TOP quality chick that single-stage incubation can produce.

The poultry industry is going through a great phase of rapid development in past two decades. Broiler chicks which use to take 48 days to achieve a weight of 2.0 Kg now it is achieved in less than 35 days. Genetics has played a major role in this drastic improvement in broiler performance, and it is a continuing process. It will be no surprise that in the next few years this growing time can be reduced to 28 days or even less. Additionally, with a dramatic reduction in grow-out time, broilers can gain that weight with far better feed utilization than ever before. With this great genetic improvement, the needs of the embryo during development are also under great pressure and need to improve to provide the precise environment to fulfill this requirement. With the use of multi-stage incubation systems, we have been achieving good quality results for many years, however, with these high yielding breeds we must use convert to single-stage systems to achieve their genetic potential. Single-stage incubation provides consistent and precise requirements to the embryo for each stage embryonic development.

Single-stage machines can be profiled to maintain precise conditions for the developing embryo, by doing this we can use the maximum efficiency of the incubators to produce the highest number of top-quality chicks. This increase in hatch is due to a decrease in early and late embryonic mortality during incubation, while results after placement on the farms shows decreased 1st week mortality as well. Because of good start the embryos get, the resulting chicks perform better throughout the grow out cycle.

Embryonic development is usually divided into three stages, endothermic, neutral, and exothermic stages. During the endothermic stage, the incubator needs added heat to developing embryos; the neutral stage means

that the incubator doesn't need to add much heat or cooling to maintain the ideal temperature, while during the exothermic stage the embryo generates a lot of heat energy which needs to be removed to provide the desired stage wise climate for developing embryo. With multi-stage machines it is not possible to provide the precise climate for the embryos stage of development, however, this is very well possible with single-stage machines.

Incubation profiles are specifically developed to achieve this with changes at numerous ages of development during incubation. In single-stage machines, while all eggs are loaded at the same time, the question comes up if all eggs must be of same age flock? Some manufacturers say it is mandatory but with our technology we can set eggs from mix aged flock with maximum variation of 12 weeks of flock age and still produce the top-quality chicks.

In single-stage machines, all embryos develop at same time with a precise climate, therefore, all organs of the chicks are developed orderly and properly which results in the best chick's performance possible. After loading eggs, the machines are completely sealed for the first 9-10 days and during this development phase, we can maintain the desired CO<sub>2</sub> level for better development of embryo. This is unique feature of single-stage and JCMI machines that can achieve this as the machine cabinets are perfectly air tight. This gives perfect climate to the embryo as well as saving and conserving energy. With this better development of the embryo, the day-old chick (DOC) weight is also greater, which results in growing more meat at the end of grow out cycle in same amount of feed, time and efforts. This gives a great amount of savings and returns on *Contd on Page 60*



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## Contn from Page 54 **Types, nutrition, health advantages and negative effects of eggs**

a strong spine structure by boosting bone density. Additionally, it contains notable amounts of calcium and phosphorus, two minerals that support the structural elements of bone tissue and assist important enzymatic processes in the body. Eggs therefore aid in the prevention of serious bone diseases as rickets, osteoporosis, and arthritis.

### 12. Aids in Preventing Anemia

Eggs' extraordinary iron content supports the body's normal production and transportation of red blood cells. A diet rich in iron also aids in preventing iron deficiency anaemia, which reduces the amount of oxygen carried by the blood to the body's important organs like the heart, brain, lungs, liver, and kidneys. So eating eggs every day definitely prevents anaemia and its side effects such as nausea and dizziness.

### How many eggs a day should you eat?

The world's best super food is an egg. Due to its complete protein content, abundance in important vitamins, and other antioxidants, it aids in maintaining your health and warding off chronic ailments.

The recommended daily consumption of cholesterol is 300 mg, according to the National Institute of Nutrition (NIN) and the Indian Council for Medical Research (ICMR).

Therefore, people can safely have one egg per day, three to four times per week, as part of a healthy, balanced diet.

Boiling eggs is the best method of consumption because it contains no extra fat or calories. Boiling egg whites, which have no cholesterol and can be used up to two per day, are a simple way for people who need additional protein to satisfy their needs.

### Negative effects

Salmonella germs can cause food poisoning if eaten uncooked, thus avoid doing so. Eggs with intact shells that are clean may contain these germs. People who are prone to egg allergies should avoid eating eggs because doing so may cause them to feel sick, bloated, or flatulent right away. Additionally, consuming raw eggs may result in a shortage in biotin or vitamin B7, which can cause cradle cap in infants and seborrheic dermatitis.

### Conclusion

Eggs are a full source of affordable protein that supports growth, development, and general health thanks to their abundance of key elements. Eggs are highly regarded as a great, healthy item that gives food a delicious taste and flavour. They provide a quick source of energy, suppress the appetite, aid in weight loss, and improve cardiovascular health.

## Contn from Page 56 **Importance to improve first week body weight and reduce early chick mortality**

- **Protein Hydrolysate:** Protein Hydrolysate is a functional protein especially formulated to **improve the performance of the birds.**

Overall **GROX** is like chick ORS- the complete solution to optimize performance of baby chicks in terms reducing early chick mortality and increase the body weight first 10 days. However, GRO-X can be used any stress conditions whenever encountered.

**Usage:** 1g /Liter of drinking water for 7-10 days after arrival of chicks.

**Monitoring observations of chicks after use of GROX: Based on various field trials, following results were anticipated.**

1. Increased Body weight of chicks after 10 days around 10-20 g
2. Reduced Mortality in chicks by around 0.25-0.5%
3. General observations: By using GROX chicks looked healthy / active and responsive and inclined towards the optimum performance at the end.

## Contn from Page 58 **Single-Stage Incubation to Produce Top Quality Chicks**

the investment of the total project. When someone does their own processing or integration, they will reap these benefits. In this way, return on investment is not more than three years after the initial startup.

Being that embryos are high yielding; it is believed that they are more sensitive and susceptible to stressors. Additionally, single-stage incubators, in comparison with multi-stage incubators, provide a better opportunity to sanitize completely after every incubation cycle. Whereas multi-stage operations are a continuous process and there is no possibility to do this kind of sanitization as the incubators are rarely empty. In today's world, the need for thorough sanitation is becoming the new biosecurity

norm, to reduce the disease load in hatchery and make hatchery operations more efficient. Another advantage for using single-stage systems other than maintaining better biosecurity, is the labor saving these machines can offer. When loading of eggs, it can be done more efficiently as this can be accomplished with availability of manpower as you can start incubation at your decided time of hatch and not only be the time of placing in the incubator.

Therefore, presently, single-stage incubation offers many more benefits as compared to multi-stage with the benefits undoubtedly increasing long term with the overall improvements in the efficiency of operations.



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# The Gut-Lung Axis in Poultry Health and Disease

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Former Prof. and Head, Veterinary Pathology,  
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## Highlight Points

Respiratory diseases are common in poultry because of its anatomy, physiology and functions. Respiratory infections are caused by Bacteria, Virus, fungi and parasites. Interest in the study of lung microbiota has steadily increased over the last decade and it is now widely accepted that the lungs harbor bacterial communities like those of the gut, the micro-organisms of the respiratory and gut microbiota play a role in health and diseases.

## Introduction

Sustainable poultry meat and egg production is important to provide safe and quality protein sources in human nutrition worldwide. Poultry must have a healthy and functional intestinal and respiratory tract to maintain health and the excellent feed efficiency that is required by modern production standards.

The gastrointestinal (GI) tract of chickens harbor a diverse and complex microbiota that plays a vital role in digestion and absorption of nutrients, immune system development and pathogen exclusion. However, the integrity, functionality, and health of the chicken gut depends on many factors including the environment, feed, and the GI microbiota. Even the low-grade damage to the intestinal tract by pathogenic bacteria may cause poor feed efficiency and decreased rate of gain to escalate the total production costs. In addition, more severe enteric damage by bacterial infection will cause overt illness and high mortality in a poultry flock.

Similarly, the respiratory tract also exposes to the noxious gases like carbon monoxide, ammonia, hydrogen sulfide and other gases that effect the respiratory epithelia and affect the normal microflora providing free passage way for enter of pathogenic bacteria, which not only cause respiratory diseases and also cause enteric problems. This paper deals with the mechanism of inter infections between different systems.

**What is the role in Gut-Lung Axis during Respiratory Diseases?**

The **gut-lung axis or GLA** has emerged as a specific axis

with intensive dialogues between the gut and lungs, involving each compartment in a two-way manner, with both microbial and immune interactions.

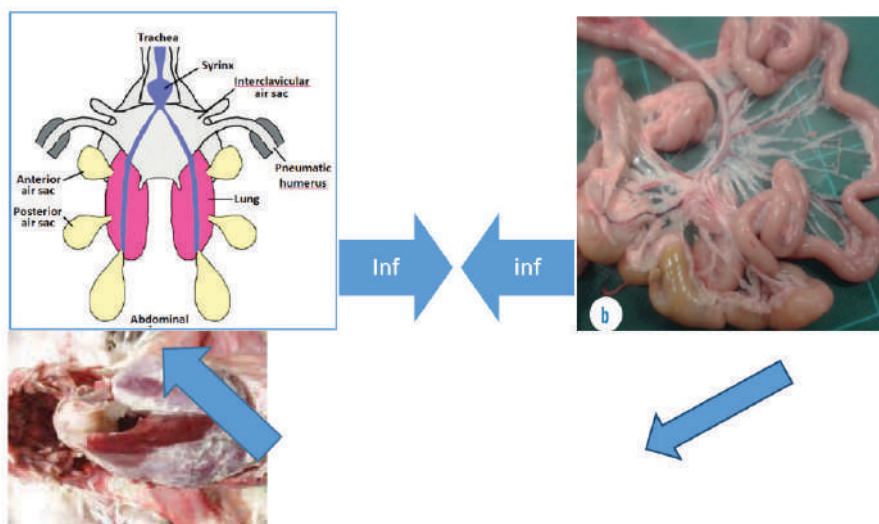
The pathophysiology of the complex respiratory diseases in poultry seems more complex than previously assumed. It has been recently posited that respiratory comorbidities might be partly modulated by the bidirectional inter-organ

communication with the gastrointestinal tract, referred to as the gut-lung axis. This new field of research is now investigating how gut microbiota modulates the onset of respiratory infections and whether the airway microbiota in turn, influence host epithelial and immune cells to adjust inflammatory responses at distal sites such gut.

Infection can spread from air sacs to peritoneum as seen in mycoplasma and E. coli infection causing peritonitis, perihepatitis and enteritis (fig1)

## The role of Microbiota

The normal intestinal and lung microbiota plays an essential role in the development, and function of the immune system, both locally and systemically. Emerging experimental and epidemiological evidence highlights a crucial cross-link



**Fig1. Infection can spread from Lungs and air sacs to intestines and visa-versa Causing Airsacculitis, enteritis, perihepatitis and peritonitis.**



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between the intestinal microbiota and the lungs, termed the '**gut-lung axis**'. The gut and lungs are anatomically distinct, but potential anatomic communications and complex pathways involving their respective microbiota have reinforced the existence of a gut-lung axis. Compared to the better-studied gut microbiota, the lung microbiota, only considered in recent years, represents a more discreet part of the whole microbiota associated to Poultry.

**Table 1. Common Enteric and Respiratory infections of poultry**

Enteric Infections	Respiratory Infections
<b>Bacterial</b>	<b>Bacterial</b>
Campylobacter.	Infectious Coryza
Botulism.	Mycoplasma infections
Clostridium perfringens.	Pasteurella multocida -Fowl Cholera
Escherichia coli.	E.coli
Listeria.	Streptococcus
Salmonella.	Chlamydiosis
Shigella.	Ornithobacterium rhinotracheale
Staphylococcal food poisoning.	
<b>Viral</b>	<b>Viral</b>
avian influenza (highly pathogenic)	Newcastle disease
duck virus enteritis (duck plague)	Infectious bronchitis
duck virus hepatitis.	Infectious Laryngotracheitis
infectious bursal disease (hyper virulent and exotic antigenic variant forms)	Avian Influenza
Newcastle disease (virulent).	Pneumovirus
Corona viral enteritis of turkey	Fowl pox
<b>Mycotic</b>	<b>Mycotic</b>
Aspergillosis	Aspergillosis
Candidiosis	
<b>Parasites</b>	<b>Parasites</b>
Round worms, Tapeworms	Syngamus trachea
Coccidiosis	Oxyspirura, flukes (ducks).

### The Microbiota of Intestines

The microbiota of the gastrointestinal tract is a complex ecosystem predominantly comprised of bacteria, but also contains viruses, archaea, fungi, and protozoa.

The commensal microbiota is attached to the epithelium of the intestine and plays an important role in maintaining homeostasis and in the protection against colonization by pathogens.

The microbiota interacts with the chicken immune system assisting the training and maturation of the immune cells to ensure that commensal microorganisms are tolerated, pathogens are recognized and curbed and those potentially pathogenic commensal microorganisms such as *Clostridium perfringens* and *Escherichia coli* are kept in check.

### Bacterial Enteritis in poultry

Enteric bacterial infections in poultry pose a threat to intestinal health and can contribute to poor feed efficiency and livability of a flock. A variety of enteric bacterial diseases are recognized in poultry. (see table.1) Three of these bacterial diseases, necrotic enteritis, ulcerative enteritis, and Spirochaetosis, primarily infect the intestine, whereas other bacterial diseases, such as salmonellosis, Colibacillosis, mycobacteriosis, erysipelas, and fowl cholera, affect a variety of organ systems in addition to the intestine.

### Viral Enteritis in Poultry

Enteric viruses of poultry are common and pervasive. They are potentially as diverse as enteric bacteria and are responsible for production diseases resulting in substantial financial losses. Many of these viruses have RNA genomes that continually evolve, leading to multiple circulating strains of varying pathogenicity. They can be difficult to diagnose due to confounding issues, such as their presence in healthy birds, variable pathogenicity, age-related resistance, coinfection with other pathogens, and lack of convenient diagnostic tests. They are associated with complex syndromes, such as malabsorption syndrome of broiler chickens and poultry enteritis mortality syndrome, but also of diseases outside the enteric system, such as tenosynovitis caused by avian orthoreovirus and some of the more prominent virus including astroviruses, Coronaviruses, parvoviruses, picornaviruses and rotaviruses.

### What is the gut-lung axis concept ?

The gut-lung axis concept posits that **alterations of intestinal microbiota communities may have a profound effect on lung disease**. In other words, the gut-lung axis is **the bi-directional crosstalk between the gut and the lungs**. Disease in the lung affects the gut and vice versa. These links are facilitated by the gut and lung microbiome.

### How does the gut affect the lungs ?

The gut microbiota and the lungs are connected in two directions. Simply put, **immune cells located in the gut wall can leave the gut and travel through the lymphatic system to other locations around the body including the**



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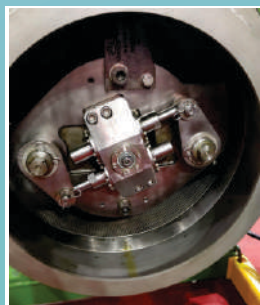


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**lungs** and, inversely, respiratory infections can alter gut microbiota composition and functions.

The **lung microbiota**, is the pulmonary microbial community consisting of a complex variety of microorganisms found in the lower respiratory tract particularly on the mucous layer and the epithelial surfaces. These microorganisms include bacteria, fungi, viruses and bacteriophages.

**The bacterial part of the microbiota has been more closely studied. It consists of a core of nine genera:** *Prevotella*, *Sphingomonas*, *Pseudomonas*, *Acinetobacter*, *Fusobacterium*, *Megasphaera*, *Veillonella*, *Staphylococcus* and *Streptococcus*. They are aerobes as well as anaerobes and aero-tolerant bacteria.

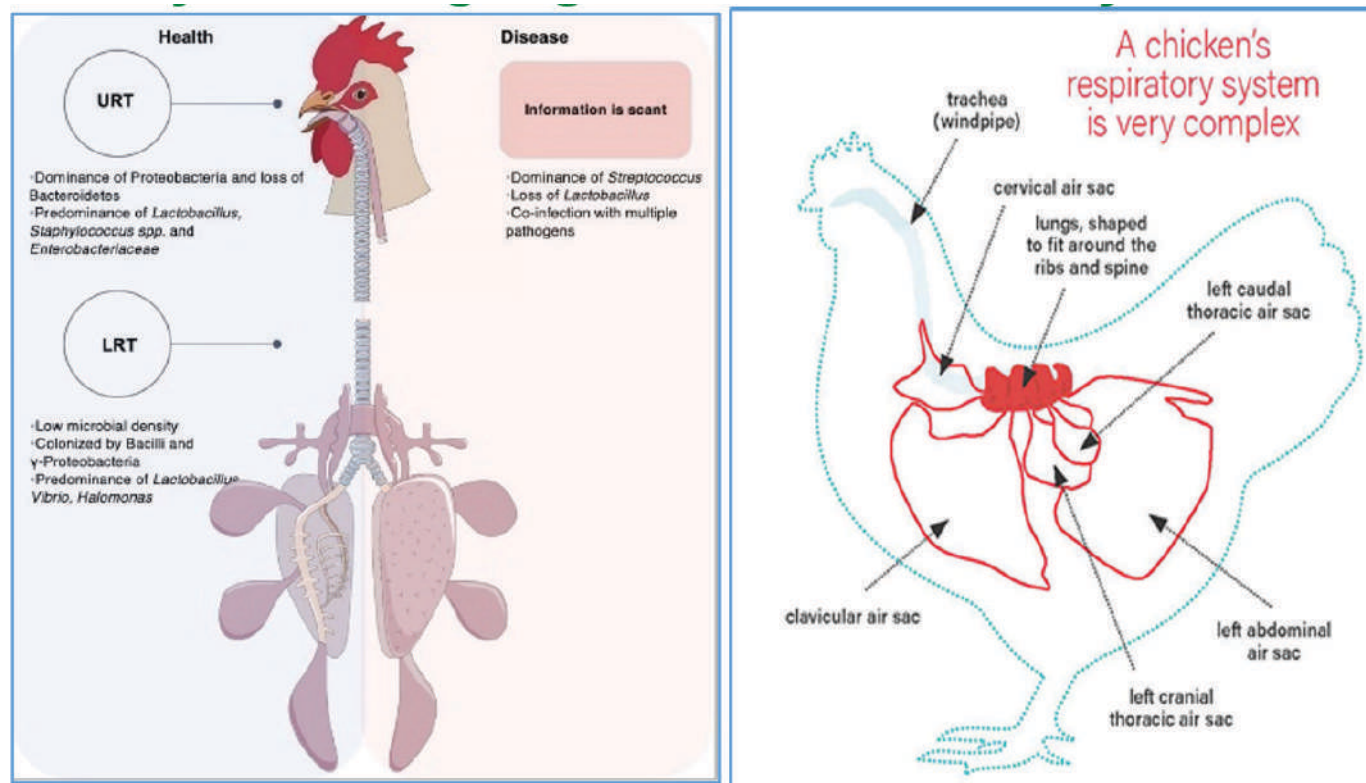
**The fungal genera that are commonly found make up the lung mycobiome, in the microbiota of the lung, and include:** *Candida*, *Malassezia*, *Neosartorya*, *Saccharomyces*, and *Aspergillus*, among others.

The air sacs are closely connected to many organs other than the lungs - including bones! Intestines, liver, spleen, and oviduct and are subject to infections. **A localized infection of the respiratory system can easily spread to the digestive system** or the oviduct and vice versa through pathogen migrations, such as septicemia due to coli bacillary superinfection in poultry.

Colonization of the air sacs of a chicken by *E. coli* following an infectious bronchitis virus and mycoplasma infection is an example of secondary bacterial invasion. In other cases, the bacterial component of the respiratory disease is the primary initiating cause of the disease. Examples of primary bacterial respiratory disease are infectious Coryza and Fowl Cholera in chickens.

While the vast majority of studies focused on the bacterial component of the microbiota in healthy and pathological conditions, recent works have highlighted the contribution of fungal and viral kingdoms at both digestive and

### Poultry breathing organs: a vulnerable system



**Fig.2. Poultry Respiratory System: lungs and air sacs complex**

Poultry have air sacs outside their lungs (fig.2). Air sacs provide the lungs with air continuously, yet they do not participate in gas exchanges.

They can be compared to a bellows. They are certainly useful for flying birds, but they can be a serious problem in poultry production because organs have slightly vascularized thin membranes, which makes them difficult to treat in cases of infection. In almost all the respiratory diseases they get infected with different degree of lesions and are called air sacculitis.

respiratory levels.

Bacterial communities in the lungs also change in response to changes in the immune status of these tissues. For example, acute lung injury induces an increase in inflammation, which causes distinct changes in the community composition of the lung microbiota. These findings indicate that lung microorganisms play a vital role in maintaining the health of poultry lungs.

Gut microbiota not only plays a role in the resistance to intestinal infection, but also have a systemic effect on



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**IDEXX**

antibacterial defenses at sites outside the intestine, such as lung. Therefore the Gut microbiota plays an important role in maintaining body health and resisting respiratory infection.

The gut microbiota dysbiosis impairs pulmonary immune response against MG infection. It has been noted that MG colonization in the lung was significantly increased following gut microbiota dysbiosis, and this could be reversed by intranasal administrated toll-like receptor 2 (TLR2) ligand, recombinant chicken IL-17 protein or recombinant chicken granulocyte-macrophage colony-stimulating factor (GM-CSF) protein.

In addition, the levels of short-chain fatty acids (SCFAs) and vitamin A are significantly reduce the gut microbiota dysbiosis, but butyric acid or vitamin A as feed additives promote MG clearance in the lung of gut microbiota dysbiosis group via increasing TLR2/IL17/GM-CSF and host defense peptides genes expression.

It has been determined that gut microbiota can play a crucial role in the defense against influenza virus, *Klebsiella pneumonia*, and *Streptococcus pneumoniae* through the “gut-lung axis”. Although the understanding of the “gut-lung axis” is only just beginning, but new evidences showed that strategies to target gut microbiota have the potential to control lung diseases. For example, oral administration of *Lactobacillus* or *Bifidobacterium* can reduce the incidence of respiratory infections and reduce the critical degree of the disease.

A gut commensal bacterium known as segmented filamentous bacterium, was also reported to promote *Staphylococcus aureus* clearance in lung. In addition, gut microbiota dysbiosis chickens showed significant defects in immune response to avian pathogenic *Escherichia coli* and gut microbiota metabolite acetate that significantly inhibited the lung inflammatory injury and reduced bacterial load in lung tissues.

Therefore, it can be hypothesized that gut microbiota is a vital factor that modulate susceptibility or colonization resistance to MG.

### Conclusion

Gut microbiota metabolites are considered important mediators of gut-lung interactions. Improvements in our knowledge of the gut microbiota have broadened our vision of the microbes associated with the intestine.

These microbes are essential actors and protectors of digestive and extra-digestive health and, by extension, crucial for animal physiology. Similar reconsiderations are currently underway concerning the endogenous microbes of the lungs, with a shift in focus away from their involvement in infections toward a role in physiology.

*(The author sincerely acknowledges many figures and references from google source).*

*S.R. Poultry and Veterinary convey Greetings  
to Farmers and all*

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*Srinivasulu, Properietor*



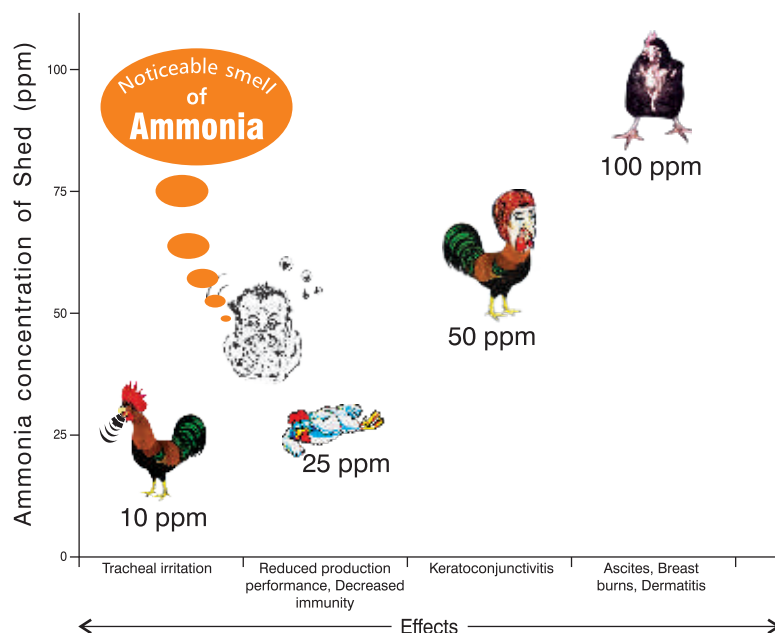
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# AmmoFree Premix

For ammonia control in poultry house

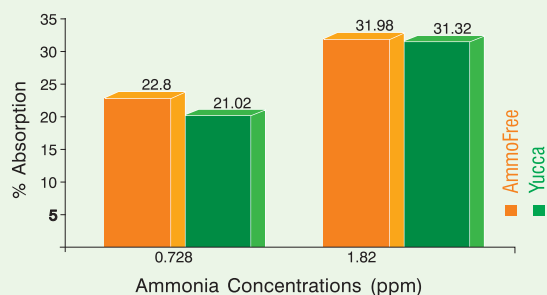


## At 25 ppm Ammonia in poultry shed

- Noticeable smell and eye irritation
- Upto 25% reduction in growth and production

## SCIENTIFIC VALIDATION

Effect of AmmoFree and Yucca extract on absorption of Ammonia



Effect of AmmoFree\* at broiler farm in winter (14° - 15°C) with noticeable ammonia concentration

Group	Livability (%)	Birds showing respiratory discomfort	Faecal NH <sub>3</sub> (g/kg dry faeces)	
			Day 21	Day 42
Control	95.00	7	3.86	3.92 (+1.55%)
AmmoFree 100g/ton	96.67	X	3.95	2.71 (-45.75%)

Trial at Commercial Poultry Farm under technical guidance of Dr. Rama Subba Reddy

## USAGE

- For minimising the level of atmospheric and systemic ammonia and other noxious gases.
- To create healthier living conditions, reduce stress levels and to improve farm environment.
- For enhancing the level of beneficial gut microflora and to reduce disease susceptibility especially intestinal and respiratory diseases.
- For better farm productivity and profitability.

## FEED INCLUSION RATE

200g /ton of feed.  
double dosage when the level of ammonia is more than 25ppm.

## PRESENTATION

1 kg& 10 kg bag



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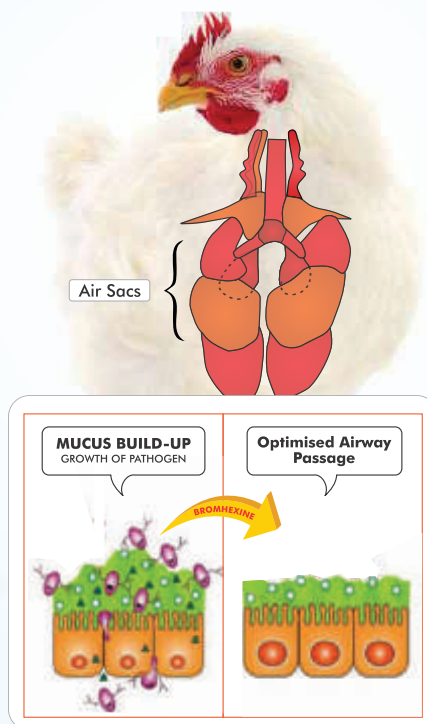


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2. The bactericidal effect achieved through reversible binding to DNA gyrase and inhibition of bacterial DNA replication and transcription.
3. Quickly reaches to peak serum concentration 1-2 hrs.
4. Good oral Bio-availability
5. Half life 6-8 hrs



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### A. Proven mucolytic

- Reduction of mucus viscosity
- Increase in ciliary mobility
- Helps with the thinning of secretion and expectoration

### B. Antioxidant action

- Captures free radicals.
- Inhibits hyaluronic acid degradation induced injury

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Alters the ability of bacteria to adhere the upper respiratory track.

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