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HOW PROTEIN DEFICIENT IS INDIA?

ARTICLE

Effect of Heat Stress



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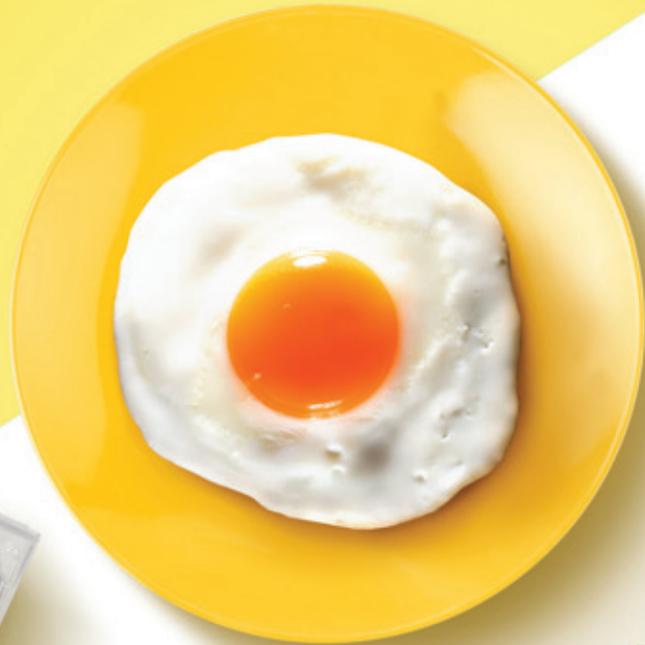


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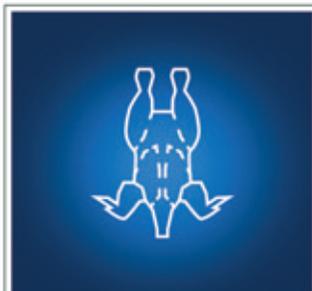
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A handwritten signature in blue ink that reads "G. N. Ghosh".

G. N. Ghosh
Managing Editor

India's pursuit of protein security is being strongly supported by a resilient and evolving poultry industry that continues to balance growth with responsibility. As one of the most efficient producers of affordable animal protein, the sector plays a critical role in delivering eggs and chicken to millions across the country, contributing directly to improved nutrition outcomes. At the same time, the industry is proactively addressing key challenges related to hygiene, food safety, and regulatory practices. While inconsistent on-farm biosecurity measures, fragmented slaughter and processing infrastructure and gaps in cold chain logistics remain areas of concern, there is a visible shift in the thinking towards structured improvement. Introducing adoption of standard operating procedures, farm-level biosecurity protocols and integration models are helping bring greater uniformity and accountability across production systems.

Efforts are also underway to modernise processing infrastructure and strengthen cold chain networks, ensuring better product quality and shelf life. Importantly, the industry now recognises the need to enhance consumer confidence. With relatively low visibility of safety standards at the consumer end, stakeholders are investing in traceability, certification, and awareness initiatives to communicate quality and safety more transparently.

Regulatory alignment is on a gradual improvement phase, with closer collaboration between industry bodies and policymakers to establish clearer guidelines and compliance frameworks. These collective efforts signal a maturing industry that is not only focused on scale but also on safety, sustainability, and trust.

As India works toward bridging its protein gap, the poultry sector stands committed—not just to feeding the nation, but to doing so with higher standards of hygiene, safety, and integrity.

Indian Research

Strong Bones, Stronger Shells: Mineral Connection in Layers

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Introduction

Modern layer produces more than 300 eggs a year and minerals are critical as building blocks for both the bird's skeletal health and the structural integrity of the eggs they produce. Moreover, minerals are the tools in the process of digestion and assimilation of food in the bird's body, necessary for rearrangement of protein and manufacture of enzymes, hormones and antibodies. They give rigidity and strength to the skeletal structure while serving as constituents of organic compounds such as muscle, blood and other organs. They also control fluid balance in the body and also regulate the acid base balance.

Minerals for layers are divided into two categories:

- I. Major / Macro-minerals
- II. Minor / Trace Minerals

I. Major / Macro minerals

A. Calcium, phosphorus and magnesium

Calcium and phosphorus are often discussed together as they are closely related in metabolism, especially in bone formation. Calcium is the most abundant mineral in the body with 97% of it being found in bone. In the laying hen, the major portion is used for eggshell synthesis. Calcium is also important for blood clotting and is required along with potassium and sodium for normal heart rhythm (*Banerjee, 1999*) as well as playing a significant role in acid-base balance in the animal body (*Leeson and Summers, 2001*). Birds require an immediate boost in calcium when they begin to lay eggs, tapping into their bone reserves to produce the shells if diet deficits calcium.

Phosphorus is a constituent of bone, red blood cells, muscle and nerve tissue and functions in buffering systems and in the metabolism of carbohydrates and fats (*Underwood and Suttle, 1999*). About 80% of phosphorus is found in bones and calcium to phosphorus ratio of bones is 2:1. Bones are the reservoirs of calcium and phosphorus. Magnesium functions structurally, electrochemically and catalytically. It reduces weight loss in heat-stressed laying hens (*Donoghue et al., 1990*).

Limestone and oyster shell are the usual options of calcium source and both contain around 38% calcium. Oyster shell is regarded as an 'insoluble' slow-release form of calcium, and so residues remain in the digestive tract for some time. Limestone, depending on particle size and physical structure, is more soluble, and there is little retention in the gut.

With a deficiency of calcium, the layer will first show loss of eggshell integrity, reduced egg production (*Scheideler et al., 1995*) and in some cases, subsequent loss in bone structure. Birds fed diets deficient in calcium, phosphorus, or vitamin D3 will show cage layer fatigue assuming there is a high egg output.

A deficiency of magnesium in the diet of laying hens results in a rapid decline in egg production, blood hypomagnesemia and a marked withdrawal of magnesium from bones, decreased egg size and shell weight.

B. Sodium, potassium and chlorine

Three elements such as Na⁺, K⁺ and Cl⁻, play a major and integrated role in osmotic regulation of body fluids and maintaining acid-base balance in the body (*Mongin, 1980*). Energy requirement for nerve impulse transmission is derived from potential energy resulting from separation of sodium and potassium in the cell wall (*Shamsudeen et al., 2002*). Potassium is also concerned in the catabolism of lysine (*Scott and Austic, 1976*).

The requirements for elements such as sodium, potassium and chlorine cannot be considered individually because it is the overall electrolyte (acid-base) balance that is important. Adekunmisi and Robbins (1987) suggested that optimum dietary electrolyte balance varies with diet crude protein level. Research indicated that adding electrolytes to the drinking water during a period of heat stress was beneficial.

Common salt (NaCl) and KCl are the commonly used mineral supplements for birds as a source of Na, Cl and K. Electrolyte (Na⁺, K⁺, Cl⁻) imbalance causes a number of metabolic disorders in birds, most notably those of tibial dyschondroplasia and respiratory alkalosis in layers.

C. Sulphur

Sulphur forms an important component of cystine, cysteine, methionine, biotin, thiamin, insulin and is the structural part of an important metabolite of coenzyme-A. Symptoms of sulphur deficiency include excessive salivation, lacrimation, and poor performance. Meat meal, fish meal, oil cakes and blood meal are common sources of sulphur, whereas excess dietary sulphur gets converted to hydrogen sulphide, a toxic agent.

II. Minor / Trace minerals

A. Iron and copper

Mangahinis discovered that iron is a constituent of blood, while MacMunn described the cytochrome enzymes to contain Fe and later the catalases and peroxidases were also shown to contain Fe. Both Cu and Fe are necessary for haemoglobin formation, while Cu is also a component of other blood proteins including erythrocyprin which is important for oxygen metabolism. Copper also occurs in certain pigments especially turacin, a pigment of feathers (*Leeson and Summers, 2001*).

Commonly used conventional sources of Fe include ferrous sulphate, ferric citrate, ferric oxide, ferrous chloride. Feeds from animal origin other than milk and milk products are rich in Fe. The common sources of copper include cupric lysine, copper methionine, cupric sulphate, cupric carbonate, cupric chloride.

Iron deficiency causes a severe anaemia with a reduction in packed cell volume. Both copper and iron deficiencies have been reported to result in loss of feather pigmentation (achromotrichia).

Indian Research

A deficiency of copper manifests itself as anaemia, emphasising its role in iron metabolism, while the cartilage from copper deficient chicks oxidizes less glucose than normal.

B. Manganese

Kemmerer et al., in early 1900s, were probably the first to demonstrate manganese to be an essential element in nutrition. Manganese plays a critical role in bone formation, required for oxidative phosphorylation and fatty acid synthesis and also reported to be effective in the in vitro activation of several enzymes, including arginase, cysteine desulfhydrase, thiaminase, carnosinase, deoxyribonuclease.

Sources of manganese include green feeds, $MnSO_4$, MnO and rice bran. However, supplementation of manganese in the organic form in laying hens has shown improved feed efficiency and egg production. Manganese deficiency is normally expressed as enlargement and malformation of the tibiotarsal joint, egg shell defects, reduced egg production and hatchability. A manganese deficient breeder diet can result in a condition in chick embryos referred to as chondrodystrophy.

C. Zinc and cobalt

Kidd et al. (1996) described the role of Zn in enzymes involved in most aspects of the immune system and also, its ability to form part of carbonic anhydrase which catalyses the breakdown of carbonic acid to CO_2 and H_2O and other enzymes such as pancreatic carboxypeptidase, lactate dehydrogenase and alkaline phosphatase. Whereas, cobalt is believed to have function in the animal body as an activating ion in certain enzymes.

Some of the zinc sources are $ZnSO_4$, $ZnCl_2$, ZnO , fish meal, wheat and safflower seed oil meal. There was an overall improvement in egg shell quality measured as shell strength, specific gravity and shell thickness, when zinc proteinate was substituted for inorganic form. Cobalt sulphate, Cobalt glucoheptate, Cobalt carbonate, Cobalt chloride, liver meal, meat/fish meal are the sources of cobalt (McDonald et al., 2002).

Signs of zinc deficiency include retarded growth, shortening and thickening of leg bones, scaling of the skin (especially on the feet), frizzled feathers, reduced feed utilisation, loss of appetite. While cobalt deficiency is normally expressed in the manner similar to vitamin B12 deficiency i.e., like anaemia, malnutrition, weakness, poor growth.

D. Selenium and molybdenum

Selenium is an integral part of the enzyme glutathione peroxidase, which is needed for cell's first line of antioxidant defense mechanism. Laying hens fed diet with selenium have shown increased egg production, improved egg yolk and albumen weight and also improved egg vitamin A, E and carotenoid contents.

Molybdenum is a component of xanthine oxidase, aldehyde oxidase, sulphite oxidase and plays a role in the reduction of cytochrome C.

Even though selenium-yeast complex (Sel-Plex) and organic selenium like selenomethionine, selenocystine, Se-methyl-selenomethionine, Se-methyl selenocystine, have gained lot of importance in recent years, the role of inorganic selenium found in different mineral salts in the form of selenite, selenate, selenide cannot be ignored.

Deficiency of Se in chicken especially in combination with low vitamin E supply, shows a development of a wide range of diseases

including exudative diathesis, nutritional encephalomalacia and nutritional pancreatic atrophy. Some researchers reported that femoral head necrosis and 'scabby-hip' syndrome were related to molybdenum deficiency.

Excessive levels of selenium cause reduced growth rate, embryonic abnormalities, anaemia, stiffness of tibio tarsal joint and the predominant pathological changes like local necrosis in the liver, myocardial degeneration and convoluted tubule necrosis in the kidney.

E. Chromium

The primary role of chromium appeared to be its involvement in the initial steps of glucose utilisation, with its activity being closely linked to that of insulin. It is also necessary for the metabolism of proteins and fats.

F. Iodine

The main function of iodine is the synthesis of tri-iodotyronine and tetra-iodotyronine (thyroxin) hormones in the thyroid gland, which influence energy metabolism, differentiation or maturation of tissues, neuromuscular functions, rate of feathering, nutrient metabolism including various minerals and water.

Iodine deficiency results in a condition called goitre, characterised by decreased output of thyroxin from thyroid gland leading to hypertrophy and hyperplasia of thyroid gland. Other deficiency symptoms include decreased egg production, obesity and growth of abnormally long lacy feathers. The iodine content of an egg is markedly influenced by the hen's intake of iodine, so eggs from a breeder fed an iodine deficient diet will exhibit reduced hatchability and delayed absorption of the yolk sac.

Concluding Thoughts

Given the variety of mineral formulations in the Indian market, it is advisable to utilise a single, trusted source. Adhering to a standardised feeding guide as a baseline is the most effective way to ensure precise and consistent mineral supplementation in layers.

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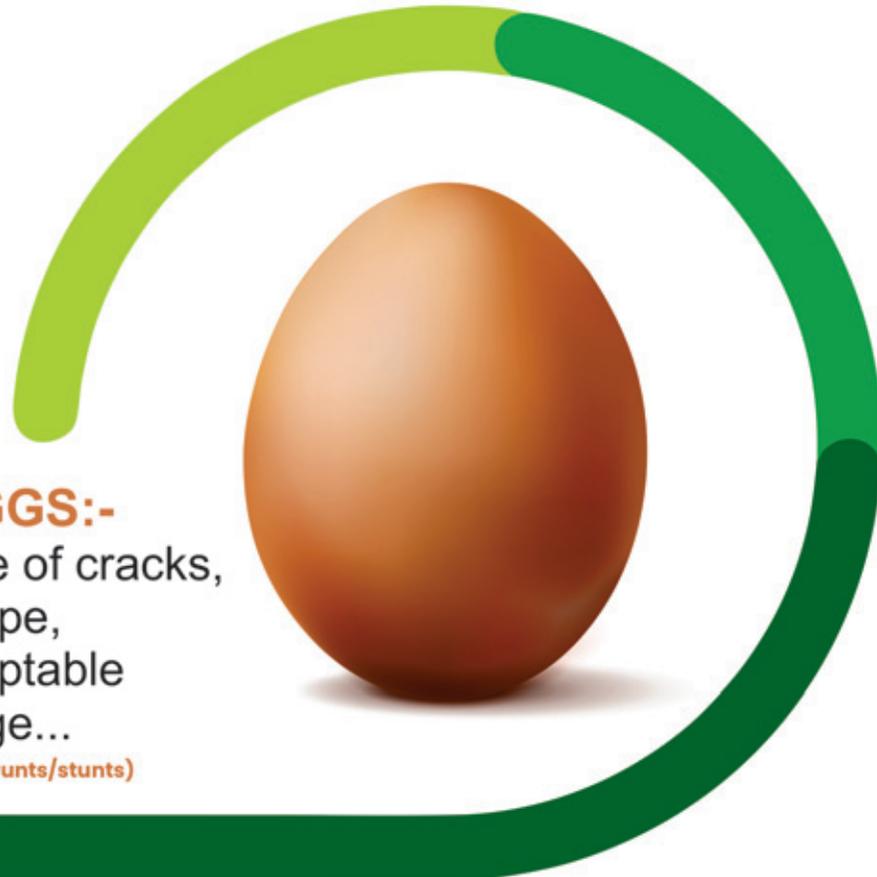
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Effect of Heat Stress



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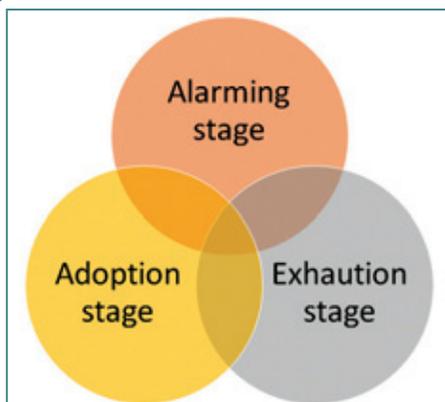
Summer stress is a major challenge in poultry production, especially during the summer months. It occurs when birds face difficulty in achieving a balance between body heat

produced and heat lost. This imbalance can lead to several health issues and production losses.

What is Stress in General?

In biology, stress is a physiological and behavioral response to any stimulus—internal or external—that disrupts an organism’s homeostasis (internal balance).

Three Stages of Stress



1. Alarm Stage: The immediate “fight-or-flight” response. The brain triggers the release of adrenaline, increasing heart rate and mobilising glucose for a burst of energy
2. Adaptation (Resistance) Stage: If the stressor continues, the body tries to adjust. In birds, the hormone corticosterone (similar to cortisol in humans) is released to help manage long-term energy needs
3. Exhaustion Stage: If the stress is never resolved, the body’s resources are depleted. This leads to metabolic failure, a weakened immune system, and potentially death

What is Stressed Chicken?

A stressed chicken is a bird whose body is struggling to maintain its internal balance (homeostasis) due to an external or internal challenge. Biologically, this triggers an endocrine response where the brain releases hormones like corticosterone (the poultry version of cortisol) to help the bird survive, often at the expense of its growth and egg production.

Researchers use a Stressed Chicken Scale (SCS) to identify a “depressed bird look” through specific body signals:

Body Signal	Stressed Appearance	Unstressed Appearance
Tail Position	Drooping or bent downward	Carried high
Head Position	Tucked into the chest or lowered	Raised high with outstretched neck
Eyes	Partially or fully closed	Wide open and clear
Beak	Open for breathing/panting	Closed during normal breathing
Wings	Drooping or held away from body	Carried high, held close to body
Plumage	Ruffled or "fluffed up" feathers	Smooth and streamlined

What is Heat stress in Chicken?

Heat stress in chickens is a physiological state occurring when environmental temperatures and humidity exceed a bird’s thermoneutral zone (typically 18–24°C or 55–75°F), leaving them unable to dissipate metabolic heat as fast as they produce it. Since chickens lack sweat glands, they rely heavily on panting (evaporative cooling) to regulate their core temperature.

General guide to the reaction of adult poultry to various temperatures (Trouw Nutrition)

55 to 75°F	Thermal neutral zone. The temperature range where a bird can maintain its body temperature without any need to modify its basic metabolic rate or behaviour.
65 to 75°F	Ideal temperature range.
75 to 85°F	A slight reduction in feed consumption can be expected, but if nutrient intake is adequate, production efficiency is good. Egg size could potentially decrease, and the quality of the eggshell may deteriorate when temperatures approach the upper limit of this range.
85 to 90°F	Feed consumption falls further. Weight gains are lower. Egg size and shell quality tend to decline. Egg production usually suffers. It is recommended to implement cooling measures prior to reaching this temperature range.
90 to 95°F	Feed consumption continues to drop. There is some danger of heat prostration among layers, especially the heavier birds and those in full production. At these temperatures, cooling procedures must be carried out.
95 to 100°F	Heat prostration is probable. Emergency measures may be needed. Egg production and feed consumption are severely reduced. Water consumption is very high
Over 100°F	At these temperatures, the priority is the survival of birds, and as such, urgent measures must be taken to cool them



Types of Heat Stress

- Acute Heat Stress: A sudden, short-term spike in temperature (lasting hours)
- Chronic Heat Stress: Exposure to high temperatures over extended periods (several days or weeks), which is more detrimental to long-term health and performance

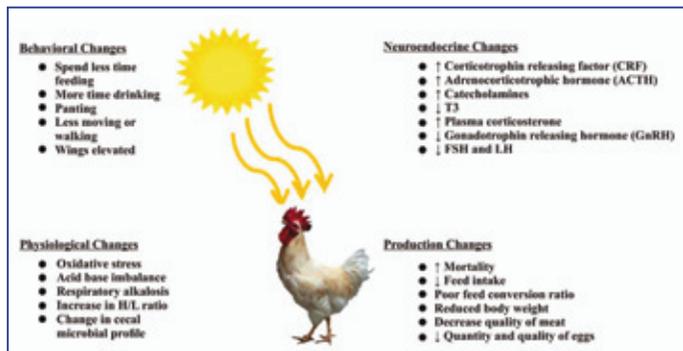


Fig.1: Effects of heat stress on behavioral, physiological, neuroendocrine, and production traits (Source: Google Images)

Key Signs and Symptoms (fig.1.)

- Behavioral: Panting with open beaks, spreading wings away from the body to expose unfeathered skin, lethargy, and seeking cooler areas
- Nutritional: Significant decrease in feed intake (up to 50%) and a dramatic increase in water consumption (often 2-4 times the normal amount)
- Physical: Pale combs and wattles, watery droppings (diarrhea), and in severe cases, convulsions or death

Physiological Consequences

- Respiratory Alkalosis: Rapid panting causes excessive CO₂ loss, raising blood pH. This disrupts calcium metabolism, leading to thin-shelled eggs and poor skeletal health
- Leaky Gut: Heat stress reduces blood flow to the internal organs, causing hypoxia and oxidative stress in the intestines. This compromises the gut barrier, allowing pathogens and toxins to enter the bloodstream
- Performance Loss: Broilers see reduced body weight gain and poor meat quality (e.g., pale, soft, and exudative meat), while layers experience a drop in egg production, size, and shell strength

Management of Commercial Poultry During Summer

Managing heat stress in commercial poultry farms requires a multi-pronged approach focusing on environmental control, nutritional adjustments, and flock management.

1. Environmental & Housing Strategies

- Ventilation Control: Use exhaust fans and cooling pads to

maintain air velocity at the bird level. Tunnel ventilation at 2.5-3.0 m/s is recommended for layers to enhance convective cooling

- Evaporative Cooling: Install foggers or misting systems to lower air temperature, but only when relative humidity is below 60-70% to avoid making the heat feel more intense
- Roof Management: Apply reflective white paint or zinc coatings to roofs to reflect solar radiation. Adding roof sprinklers or insulating materials like thatch can also reduce internal temperatures
- Stocking Density: Reduce bird density to allow more floor space for heat dissipation and prevent radiant heat buildup between birds

2. Nutritional Management

- Adjust Feeding Schedule: Withdraw feed during the hottest hours (typically 9 AM to 5 PM) to reduce metabolic heat from digestion. Reintroduce feed during the cooler night or early morning hours
- Energy-Dense Diets: Replace a portion of carbohydrates with fats or vegetable oils (up to 5%). Fat metabolism produces less body heat than carbohydrates or proteins while maintaining energy intake
- Amino Acid Balance: Lower crude protein levels to reduce nitrogen excretion heat, but supplement with essential synthetic amino acids like methionine and lysine to sustain performance
- Wet Mash Feeding: Providing wet feed can simultaneously encourage both feed and water intake, though it requires frequent cleaning to prevent fungal growth

3. Water & Supplementation

- Cool Water Supply: Ensure unlimited fresh water below 25°C. Insulate tanks and bury water lines 1-2 meters underground to keep water cool
- Electrolytes: Supplement water with potassium chloride (0.15-0.6%) or sodium bicarbonate (0.2-0.5%) to restore acid-base balance lost through panting
- Vitamins & Antioxidants: Add Vitamins C (250-400 mg/kg) and E to combat oxidative stress. These support the immune system and help maintain eggshell quality during heat waves

4. Advanced Management

- Early Thermal Conditioning: Exposing chicks to higher temperatures (36-40°C) for 24 hours during their first 3-5 days can help them develop better thermotolerance later in life
- Genetic Selection: Utilising breeds with the Naked Neck (Na) or Frizzle (F) genes can naturally improve heat dissipation due to reduced feather cover

Smart minerals, Smart nutrition, Smart decision

THE BENEFITS



Increased stability



Improved palatability



Low solubility



Increased bioavailability



Improved digestibility



Minerals are an essential nutrient for production animals. It is very important to feed a stable and highly bioavailable source of trace mineral, in order to optimise health, wellbeing and performance, as well as minimising environmental impact. Our

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Article

Precision Mineral Nutrition: Elevating Poultry Health with Hydroxy Trace Minerals

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Trace minerals such as zinc, copper, and manganese are fundamental to poultry health, acting as cofactors in vital biochemical pathways: skeletal development, immune defences, antioxidative systems, enzyme functions, feathering, and reproductive performance. Yet, the typical composition of feed ingredients often falls short of modern poultry standards. That's why precision mineral nutrition—providing the right mineral at the right time and in the right form—is essential to support optimal broiler growth, eggshell integrity in layers, and fertility in breeders.

While inorganic sources like sulphates and oxides have been staples for decades, they suffer from low bioavailability and reactivity. These soluble compounds can prematurely release minerals, which then form insoluble complexes with phytate or binding agents in the gut, diminishing absorption and even degrading vitamins or enzymes in the premix. This not only reduces feed efficiency but also increases mineral excretion, raising environmental concerns. Organic (chelate) minerals improved this situation, but often at a premium cost and with variable potency. Enter the next generation: hydroxy trace minerals. Hydroxy trace minerals, like copper, zinc, and manganese hydroxychloride, represent the latest leap in mineral nutrition. Their crystalline, covalent structure is non-hygroscopic and non-reactive in feed and the upper gut. This structure allows slow, controlled release of minerals at the ideal intestinal absorption site, significantly improving bioavailability. They resist premature dissolution, ensuring minerals are released more slowly and absorbed where it matters most.

Research across poultry sectors consistently shows that hydroxy trace minerals outperform inorganic sources. Broilers fed hydroxy copper and zinc achieved 7–8% heavier carcasses and a noticeable boost in breast meat yield. In independent trials, hydroxy-supplemented flocks maintained or improved feed conversion ratios while using lower inclusion levels than sulphate-based diets. Moreover, in antibiotic-free or necrotic enteritis challenge models, hydroxy minerals reduced pathogen load and mortality, performing on par with ionophores. Layers also benefit: eggshell quality improves, feed remains stable longer (less oxidation), and FCR gains are consistent when inorganic Cu, Zn, Mn are replaced with hydroxy versions. Breeder flocks, too, see enhanced fertility and hatchability under precision hydroxy mineral regimes. Beyond performance, hydroxy trace minerals contribute to gut integrity and immune defence. Broilers on hydroxy mineral diets exhibited reduced cecal enterobacteria and maintained tight junction integrity, translating into healthier birds and better carcass quality.



Discover IntelliBond: Precision You Can Trust

Among hydroxy trace mineral solutions, Trouw Nutrition's IntelliBond stands out as a premium, thoroughly validated choice. Designed to optimise delivery of copper, zinc, and manganese, IntelliBond features:

- High bioavailability and potency : thanks to stable, covalent crystalline bonds that release minerals at the optimal intestinal site
- Enhanced feed stability and nutrient preservation: safeguarding enzymes like phytase and vitamins from degradation in premixes
- Improved bird performance and economics: with independent studies showing better feed conversion, heavier carcasses, superior egg output, and healthier flocks under stress
- Environmental sustainability: with reduced inclusion rates and lower mineral excretion promoting cleaner production

- Unmatched versatility across poultry species and life stages: including broilers, layers, and breeders—even under challenging conditions like heat stress or compromised hygiene. This adaptability has been validated across multiple trials and production environments.

Proven Performance Across Poultry Types

A Spanish study comparing hydroxy vs. sulphate-fed broilers at nutritional levels found that those receiving hydroxy minerals (IntelliBond C and Z) achieved 7.4% higher live weights, 7.7% heavier carcasses, and 16.1% breast meat yield, versus 15.3% in the sulphate group. Another Trow Nutrition joint trial with the University of New England demonstrated improved bone integrity (tibia breaking strength) and breast meat zinc content in broilers fed 100 ppm IntelliBond Zn, with gut integrity maintained. In antibiotic-free commercial conditions, hydroxy copper-chloride combined with organic acids matched or exceeded the performance gains of feed antibiotics while improving egg weight, mass, and feed efficiency in layer hens. These findings highlight the ability of IntelliBonds to deliver consistent productivity gains across broilers, layers, and breeders—even under stress or antibiotic-free regimes. Trow Nutrition India has been pioneering mineral-precision feeding. “Trow Talks” events in Karnal and Hyderabad, unveiled IntelliBond’s OptiSize technology—highlighting uniform, stable crystals that protect premix integrity and animal performance. Trow Nutrition’s new premix plant near Hyderabad supports local production of trace minerals, vitamins, and specialised premixes—readying India for advanced feed solutions. This investment and local research infrastructure underline Trow Nutrition’s strong commitment to validating hydroxy mineral efficacy under Indian production conditions.

Why IntelliBond Stands Out

Developed over two decades and backed by 200+ global trials, IntelliBond hydroxy trace minerals ensure predictable delivery and dependable results through:

- Superior bioavailability due to controlled release and crystalline stability
- Enhanced feed stability, maintaining vitamins, enzymes, and reducing oxidation in premixes
- Animal performance gains, improving carcass weight, egg production, feed conversion, and profitability
- Gut health, by reducing pathogenic bacteria and preserving gut barrier integrity in broilers
- Environmental responsibility, lowering mineral excretion while supporting sustainability-focused operations

Precision Manufacturing and Traceability

Trow Nutrition’s OptiSize technology guarantees uniform particle size and non-hygroscopic behaviour. Its low reactivity protects feed integrity, while rigorous traceability—from raw material origins to lot distribution—ensures feed safety and compliance.

Modern poultry production demands precision: the right trace mineral, in the right form, at the right level. Hydroxy trace minerals—especially IntelliBond—deliver on that promise. Scientific evidence and Trow Nutrition’s local investments prove that these superior minerals enhance productivity, welfare, and sustainability in broilers, layers, and breeders. By choosing IntelliBond, nutritionists and producers gain a trusted, research-backed solution that fosters better performance, protects investments, and advances poultry industry goals in India and beyond.



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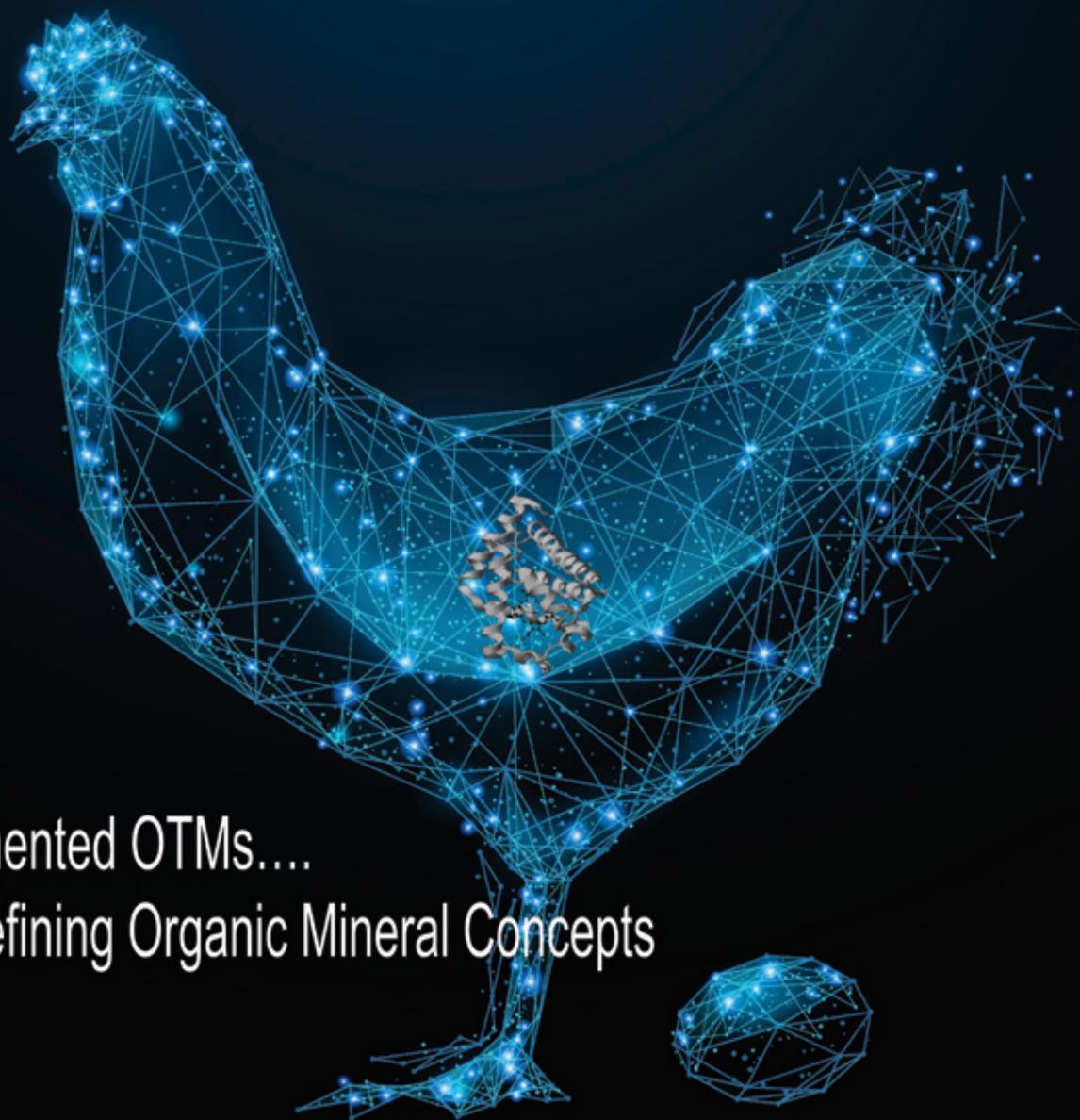
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Fermented OTMs....
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Khoa: Let it Not be Lost Like its Name

SHRIDHAR speaks



Tarun Shridhar
Director General,
Indian Chamber of
Food and Agriculture,
and former Secretary,
Ministry of Fisheries,
Animal Husbandry and
Dairying, Govt. of India

Burfi, peda, gulab jamun and a host of other traditional Indian sweets owe their taste and texture to the humble khoa. This versatile base and primary ingredient in mithais is nothing but milk concentrated and reduced to one-fifth of its original volume through heating in an open pan. The bulk of Indian sweets are made from *khoa* (partially heat-desiccated milk), *chhana* (coagulated milk drained of whey), *chakka* (concentrated curd) and, of course, ghee/makkhan (butter fat).

While there are quite a few industrial-scale producers of canned/cup-packed *rasogollas, gulab jamun, shrikhand* and other *mithais* (the likes of Haldiram's, Bikanervala, Amul and K.C. Das) and also of *ghee* (Patanjali, RKG and various dairy cooperative brands), we hardly have any organised manufacturers of *khoa* or *chhana*.

In our economic vocabulary, *khoa* can also mean what it sounds like: "lost". Lost value, lost trust, and—most of all—lost opportunity for organised dairies.

Since decades, India has produced milk in bulk. Production moved from about 198.4 million tonnes in 2019–20 to 248 million tonnes in 2024–25. Per-capita availability has climbed to roughly 485 grams a day. This is a "success story" in volume. Yet the story that matters for farmers and consumers is still about channels—the difference between producing milk and building markets for milk products that

pay well, travel safely, and create durable brands.

Government disclosures based on 2024–25 data make this structural gap plain. Roughly 94 million tonnes are consumed at the producer level. Of the remaining marketable surplus (about 154 million tonnes), only around a third is handled by the organised sector; the rest moves through unorganised trade. This is where value addition leaks away: not because traditional products lack demand, but because the institutions that can standardise quality and monetise trust have hesitated to enter them at scale.

Khoa is a textbook case. A commonly cited estimate suggests that around 5.5% of India's milk is converted into *khoa*. If we apply that proportion to today's milk output, the milk-equivalent flow destined for *khoa*-making is not small—it is in the range of 13–14 million tonnes a year translating into about 2.5 million tonnes of *khoa* as approximately 5 kg milk yields 1 kg *khoa*. At an upward of Rs 250 per kg this means an industry worth Rs 65,000 crore. It is intriguing, then, why a commodity having such a humungous market size isn't really on anybody's radar. With an assured market, including scores of *halwais* (sweetmeat makers) and households, it is an ideal product to move milk up the value chain. Our traditional sweets were, after all, developed basically to preserve the nutritional goodness of milk and to extend its shelf life under high ambient temperatures.

Khoa is obtained by rapidly evaporating milk in shallow pans to a total solids content of about 70%. This dense ball of protein and fat has a shelf life of a few days at room temperature and can even be frozen for long term conservation. Currently, 99% of all *khoa* is produced on a cottage scale in rural/mofussil areas and brought to urban centres for making *khoa*-based sweets. The lack of standardisation due to production in informal units using very rudimentary techniques tends to compromise quality. The point is not to

argue over an exact number (there is no official national series for *khoa* output). The point is to recognise that *khoa* sits on a river of milk that is already flowing—only, most of it flows outside the organised dairy economy.

Why should dairies care? Because *khoa* is both a margin story and a legitimacy story.

Food companies are turning to traditional dairy products with a fresh zeal, with the segment emerging as an important driver of the Rs 12,30,000 crore domestic dairy industry. According to dairy experts, traditional milk products are the largest selling and most profitable segment of our dairy industry and account for 50% of milk produced and 95% of all milk products consumed in India. Therefore, it is logical that the organised dairy sector must not only add *khoa* to its basket of products but aim to manufacture at least 20% of the *khoa* currently consumed in the country. If this production of 400,000 tonnes is done over say 200 days in a year by cooperative and private sector dairy plants, *khoa* making capacity of some 2,000 tonnes per day or say 50 modern *khoa* making plants with capacity of 40 tonnes per day each would be needed. Each of these plants will need to handle 200,000 litres of milk daily.

All the *khoa* making machines that we have today are small scale scraped surface evaporators that simulate the traditional *khoa* making process which involves evaporation of water from milk to bring the total solids of milk to about 70%. That is a concentration of milk to about one-fifth of its original volume. None of the large scale processors of milk in the country produce *khoa* as the available machinery and technology can handle only about 1,000 litres of milk per hour. Modern milk processing plants handle 10,000 to 50,000 litres of milk per hour. The approach adopted in the innovative process is to use existing large scale equipment to manufacture *khoa*.

Using modern and efficient manufacturing



machines and processes, *khoa* is the perfect product to add value to raw milk, thus assuring better returns to the primary producer and secondary handler alike. Like butter and milk powder, it can be produced in the flush season and frozen so that it is also available in plenty during the lean season. *Khoa* freezes well and can be converted to all kinds of indigenous sweets at the halwai level for further value addition. *Khoa* supplied by the organised sector under reputed brand names to halwais would provide quality integrity and assurance to the large quantities of mithais. Quality of milk-based sweets is frequently questioned because of fear of adulterated milk and this affects the demand of milk and milk products from traditional suppliers; branded *khoa* could eliminate these fears and stimulate demand for milk-based sweets.

The National Milk Grid (NMG) works on the use of surplus conserved dairy commodities to even out regional and seasonal variations in supply and demand. Currently it consists of milk powder and butter. *Khoa* can be added to the list of dairy commodities to help the functioning of milk grid. The informal market already does it. *Khoa* is being stored in enough quantities to

meet the festival demand during Diwali. For example, *chakka* for the manufacture

Khoa is the perfect product to add value to raw milk, thus assuring better returns to the primary producer and secondary handler alike. Like butter and milk powder, it can be produced in the flush season and frozen so that it is also available in plenty during the lean season

of *shrikhand* is prepared in winter and used in the summer season to meet the demand at weddings. It also takes

care of high demand during the summer season of milk shortage. So, *chakka* is contributing to the orderly functioning of the milk grid.

Khoa becoming part of the commodities that make the milk grid work can also be the first major step to get into the traditional milk sweets market. This is likely to ultimately lead to increased returns to the organised dairy sector as more milk comes into its ambit resulting in small farmers getting a better price for the seasonal milk surplus in the flush winter months.

Our *mithais* are gradually losing to chocolates. For generations, *khoa* has created India's sweet moments but now several of them come out of chocolates wrappers. We need to go back to our *burfi*, *gulabjamun* et al. The 248 million tonne milk produced in our country is an aggregation of the daily output of millions of farmers and cattle. Strengthening and consolidating the production and market base of our traditional milk-based sweets would multiply the economic gains right across the value chain; and *khoa* is the key. *Khoa* need not remain "*khoya*".

The opportunity is sitting inside our own tradition: a product Indians consume culturally and emotionally, a value chain that already exists.

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Misinformation About Hormone Use in the Poultry Industry: Scientific Facts Vs. Myths



Introduction: Origin and Persistence of the Hormone Myth

One of the most widespread misconceptions surrounding poultry meat and eggs is the belief that growth hormones are routinely used in the poultry meat and egg industry to increase body weight, accelerate growth, or enhance egg production. This misconception persists despite enormous scientific evidence and strict regulatory bans across major poultry-producing countries. Consumer perception studies conducted in Asia and Europe report that 70–90% of respondents believe hormones are added to broiler chickens and laying hens, often associating poultry meat and eggs with health risks such as early puberty, hormonal imbalance, and cancer (Karasu & Öztürk, 2021; Verbeke et al., 2010). Unfortunately, this misunderstanding is amplified by misleading media narratives and the misinterpretation of naturally occurring hormones present in all living organisms. Both chicken meat and eggs naturally contain trace levels of endogenous hormones, but these are produced by the birds themselves and are not the result of external hormone administration (Courtheyn et al., 2002).

This misinformation negatively impacts consumer trust, poultry farmers, and allied industries while diverting attention from genuine food safety issues such as nutrition, sustainability, and antimicrobial resistance. International authorities including the FAO, WHO, FDA, and European

Commission have repeatedly clarified that neither broiler chickens nor laying hens are given growth or production hormones (FAO/WHO, 2011; FDA, 2023). Addressing this myth with evidence-based communication is essential for informed consumer choice and public confidence in the poultry meat and eggs.

Scientific Reality: Hormones are not Used in Poultry Meat or Egg Production

From a biological, practical, and economic standpoint, the use of hormones in poultry meat or egg production is neither effective nor feasible. Comprehensive scientific reviews confirm that no hormone products are approved or used in broiler chickens or commercial laying hens (Esquivel-Hernández et al., 2016). Unlike cattle, poultry have a very short production cycle, and their endocrine systems respond poorly to externally administered growth hormones. Experimental studies evaluating somatotropin and steroid hormones in chickens have consistently shown no significant improvement in growth rate, feed efficiency, or egg production (Scanes, 2009). In laying hens, egg production is regulated by tightly controlled physiological mechanisms involving the hypothalamic-pituitary-gonadal axis, which cannot be manipulated safely or effectively through exogenous hormone supplementation (Johnson, 2015).

In all this controversy, even if protein-based hormones were administered, they would be degraded during digestion, making oral delivery ineffective, while injection is impractical in commercial systems housing thousands of birds (Esquivel-Hernández et al., 2016). Moreover, hormone compounds are expensive and incompatible with the low-margin economics of poultry and egg production. As a result, no scientifically rational or commercially viable pathway

exists for hormone use in poultry sector.

Regulatory Prohibition of Hormone Use in Poultry Production

Regulatory agencies reinforce this reality. The U.S. FDA explicitly states that hormones are not permitted in poultry or egg production, and no hormone-based drugs are approved for laying hens (FDA, 2023). Similarly, the European Union banned growth hormones in food animals decades ago, with strict monitoring programs ensuring compliance (European Commission, 2018). These regulations apply equally to meat- and egg-producing birds.

Genetics, Nutrition, and Management: The True Drivers of Broiler Growth and Egg Production

The enhanced productivity of today's broilers and laying hens is the result of decades of systematic genetic selection, supported by precision-based nutrition and advanced management practices, rather than hormone use. Early evidence for this genetic progress was demonstrated by Havenstein et al. (2003), who showed that modern broilers reach market weight nearly twice as fast as birds from the 1950s when fed the same diets, clearly confirming that genetics, not hormones drive growth improvements. Over successive generations, selective breeding programs have focused on birds with superior growth potential and efficient feed conversion ratio (FCR), enabling higher body weight gain from less feed consumption. Continued genetic selection has subsequently enhanced muscle fibre deposition efficiency, particularly in the breast muscle, leading to higher lean meat yield. These improvements are achieved using selection indices that integrate growth, efficiency, health, and welfare traits, ensuring sustainable productivity

without compromising biological integrity (Havenstein et al., 2003; Zuidhof et al., 2014; Scanes, 2009).

Similarly, long-term genetic selection has improved egg number, shell quality, and feed efficiency in laying hens, allowing modern layers to produce over 300 eggs per year without compromising health (Hunton, 2005). These genetic gains are supported by precision-based nutrition, with carefully balanced diets optimising growth, reproduction, and egg production (Leeson & Summers, 2001; Pattison et al., 2008). In parallel, advancements in housing systems, automation, biosecurity, and environmental management have further enhanced bird welfare and productivity, collectively explaining modern poultry performance without the use of hormones.

Hormones in Poultry Meat and Eggs: Scientific Context and Safety

All animals, including poultry and humans, naturally produce hormones such as oestrogen, progesterone, and testosterone as part of normal physiology. Consequently, trace amounts of these hormones are naturally present in chicken meat and eggs, but they are not added externally (Stephany, 2010). These levels are extremely low and biologically insignificant when consumed. The FAO/WHO Joint Expert Committee on Food Additives (JECFA), during its evaluations of residues in foods of animal origin, concluded that naturally occurring hormone residues pose no health risk to consumers, including children and adolescents (FAO/WHO, 2017). Therefore, claims linking poultry meat or eggs to hormonal disorders lack scientific validity. Misleading marketing terms such as “hormone-free chicken/eggs” can unintentionally reinforce public fear by implying that hormones are normally used, when in fact they are legally prohibited (Verbeke et al., 2010). Clear, science-based communication is essential to correct this misunderstanding.

Role of Social Media in Misinformation Influencing Consumers' Psyche and Its Impact on Poultry Industry

In recent years, the rapid growth of social media has enabled the spread of unverified and misleading information, often driven by poorly informed influencer or non-expert online sources seeking digital attention through fear based and sensational claims. Many people are aware that anabolic steroids are used by humans for bodybuilding or rapid muscle growth, and this awareness has led some influencers to wrongly associate various steroid use with the fast growth

of broiler chickens. This misinformation has significantly influenced consumers especially household women and mothers who are responsible for family meals and concerned about their children's and family health, resulting in reduced broiler chicken consumption. In reality, broiler chickens are not grown using hormones or steroids. Their rapid growth is the result of decades of genetic selection, balanced and precise nutrition, and improved farm management practices. Thus, broiler growth is natural within genetic potential, not artificial or hormone driven, underscoring the urgent need for science based communication and digital literacy.

Conclusion

The belief that hormones are used in the poultry meat or egg industry is scientifically incorrect, biologically implausible, and legally prohibited. Modern poultry and egg production rely on genetics (Selective Breeding), precision nutrition, health management, and environmental control, not artificial hormones. Regulatory agencies worldwide strictly enforce these standards, ensuring food safety and consumer protection (FDA, 2023; European Commission, 2018). Continuing to spread hormone-related myths distracts from real challenges such as antimicrobial resistance, climate resilience, and sustainable production systems (WHO, 2017). Scientists, veterinarians, medics, poultry industry allied professional and media professionals have a shared responsibility to communicate evidence-based facts clearly, responsibly and to bring awareness to the public about rumours and misconceptions. By communicating accurate, evidence-based information, stakeholders can first ensure that consumers are properly informed, which in turn builds trust and credibility for producers. Consequently, dismissing hormone-related myths across the poultry meat and egg industries is essential for protecting public health, strengthening food security, and maintaining confidence on poultry industry.

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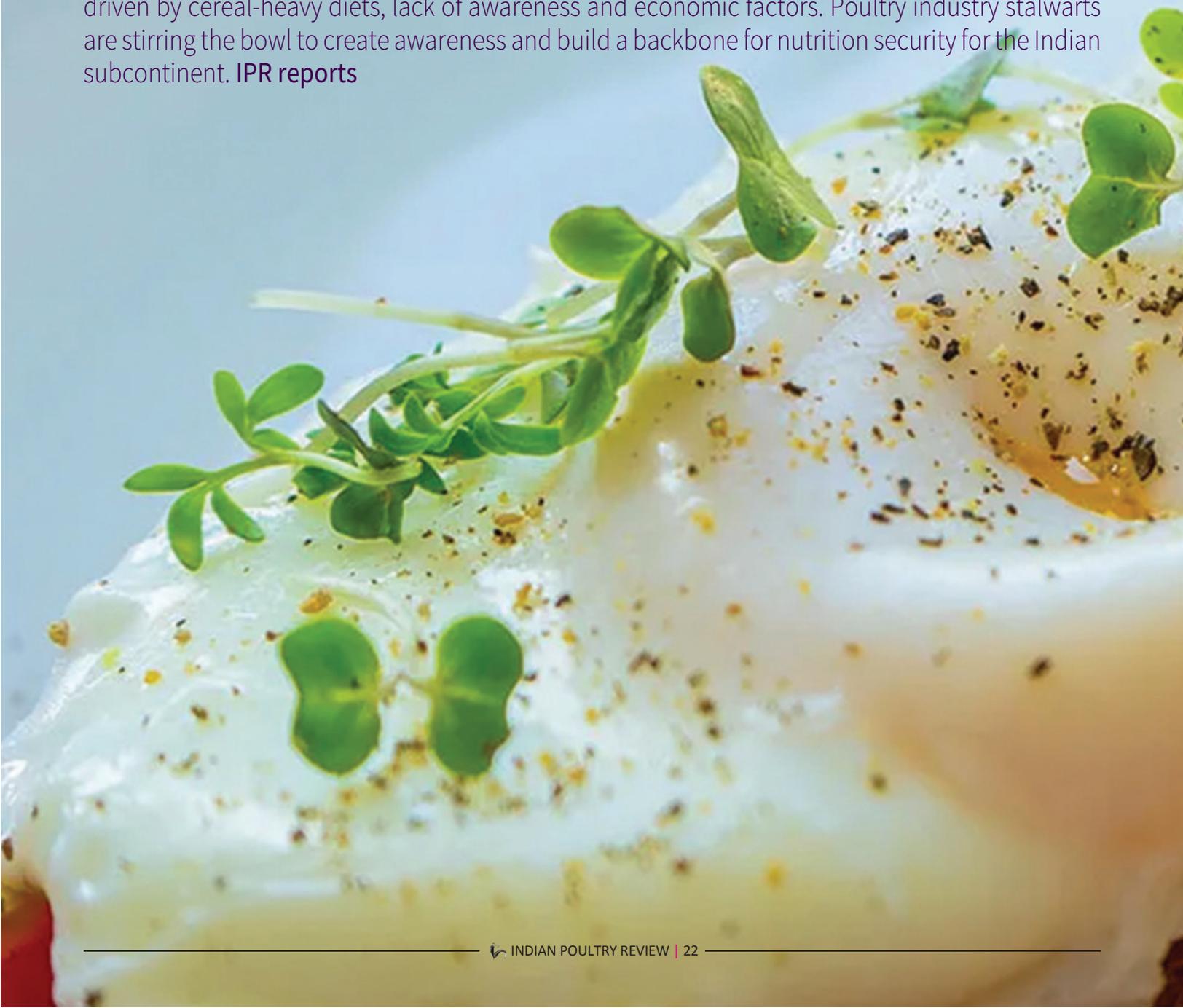
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COVER

HOW PROTEIN DEFICIENT IS INDIA?

Protein deficiency in India is a widespread, silent crisis affecting nearly 73%-80% of the population, driven by cereal-heavy diets, lack of awareness and economic factors. Poultry industry stalwarts are stirring the bowl to create awareness and build a backbone for nutrition security for the Indian subcontinent. **IPR reports**



India continues to face a serious nutrition deficit, where adequate food intake has not translated into adequate nutrition for large sections of the population. Persistent levels of child under-nutrition and poor diet quality highlight the urgent need to strengthen protein consumption. Despite high consumption of pulses, up to 91% of vegetarians and 85% of non-vegetarians are likely deficient. Key impacts include muscle loss (Sarcopenia), weak immunity, anaemia and poor child growth.

While calorie access is improving, nutrition security, especially protein security remains uneven. Poultry, through eggs and chicken meat is uniquely positioned to address this gap as one of the most affordable, widely available and efficient sources of high-quality animal protein.

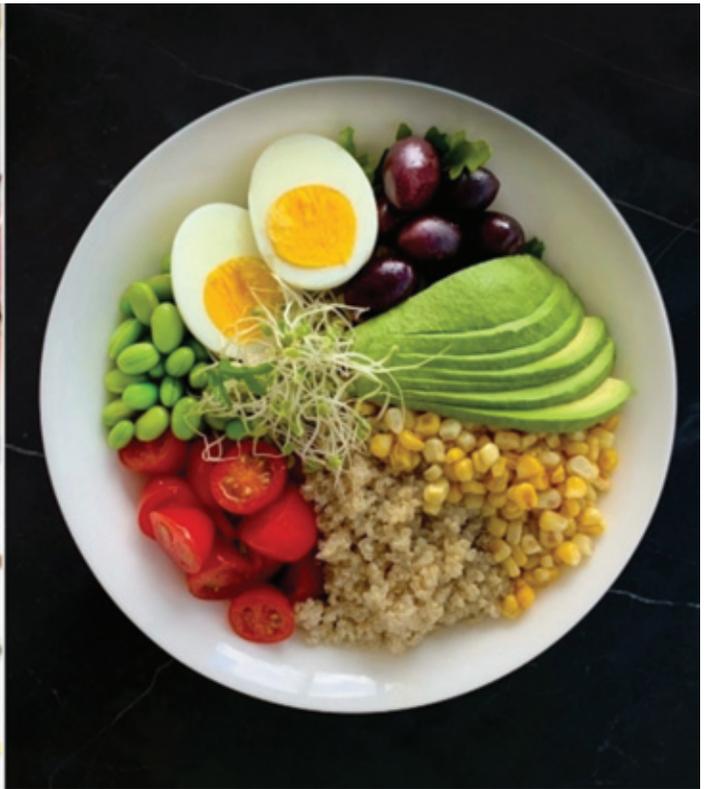
This month, the Indian Chamber of Food and Agriculture (ICFA) convened a roundtable dialogue on Poultry for Protein Security in the capital, New Delhi, to align policy, industry and public health priorities.

The current poultry sector in India has the capacity to deliver

rapid, scalable nutrition gains due to its short production cycles, high feed efficiency and strong domestic supply base. However, the sector's contribution to national nutrition strategies has not been fully realised due to fragmented policies, uneven consumer trust and gaps in food safety governance. Addressing these challenges is critical to positioning poultry protein as a pillar of India's nutrition and food security agenda.

From key statistics and findings in the Indian subcontinent, www.expresshealthcare.in reported widespread deficiency i.e. 73% of Indian diets are deficient in protein, with rural areas severely impacted. While the www.omnicuris.com survey indicates an urban crisis with a figure of up to 60% of urban Indian protein deficient, with 93% unaware of their daily requirement. The average daily protein intake for Indians is roughly 0.6 g/kg of body weight, significantly lower than the recommended 0.8 to 1 gram per kilogram, creating a high intake gap. And one in three Indian children under five suffers from malnutrition, making child malnutrition an epic issue.





Some of the root causes leading to this malnutrition story in the Indian subcontinent is dietary misconceptions like over-reliance on cereal based staples (wheat, rice) which provide calories but not enough protein. Diets often lack diversity with low consumption of pulses, legumes, dairy and livestock products. Added to this is quality protein shortage, with vegetarian diets often lacking the necessary essential amino acids found in animal products. Also, lower income levels and lack of education create

economic and educational barriers on nutrition and contribute to inadequate intake.

Here's some of the common symptoms of protein deficiency, reduced muscle strength resulting in fatigue and weakness – about 71% of Indian have poor muscle health. Thinning hair and skin issues. Poor immunity and slower healing from infections leading to slow recovery. And most importantly, increased risk of muscle loss for the elderly causing Sarcopenia.

In rural India, where agriculture sustains millions, a surprising paradox exists – protein deficiency remains widespread in households that sufficiently produce or have access to protein-rich foods. A study published by scientists at the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), the international Food Policy Research Institute (IFPRI), and the Centre of Economic and Social Studies (CESS) highlights this alarming reality: more than two-thirds of households surveyed across India's semi-arid tropics consume less protein than recommended despite sufficient availability of protein sources such as legumes, dairy and livestock products.

Conducted across six states and nine districts, the study found that diets in these regions rely heavily on staple grains like rice and wheat, which contribute 60%-75% of daily protein intake. While these foods provide some protein, they lack the essential amino acids necessary for balanced nutrition. Meanwhile, protein-rich foods such as pulses, dairy, eggs and meat remain underutilised, not necessarily because they are scarce, but due to a mix of cultural food preferences, limited nutritional awareness and financial constraints. In only a small fraction of households, inadequate protein intake may be attributed to a lack of availability and affordability. One of the study's most striking findings is that protein deficiency was not limited to low-income households. Even wealthier families, who can afford diverse diets, often fail to meet recommended protein intake levels.

This challenges the common assumption that food insecurity is purely an issue of affordability. Instead, the research highlights how deeply ingrained dietary habits, coupled with a lack of understanding about the importance of protein-rich foods,

The current poultry sector in India has the capacity to deliver rapid, scalable nutrition gains due to its short production cycles, high feed efficiency and strong domestic supply base. However, the sector's contribution to national nutrition strategies has not been fully realised due to fragmented policies, uneven consumer trust and gaps in food safety governance

perpetuate malnutrition.

Addressing this crisis from the front is O.P. Singh, Managing Director, ABTL and founder of Hello Protein, who has embarked on a mission to transform India's relationship with protein. His vision goes beyond business, it is a national call to action – to recognise protein as a fundamental driver of health, productivity and economic resilience.

A protein-deficient workforce is a slow workforce. Research shows that low protein intake leads to poor concentration, impaired decision-making, reduced immunity, more sick days and slower recovery from fatigue.

The initiative, Hello Protein, is designed to reach diverse segments – from urban professionals and students to homemakers and fitness enthusiasts – by simplifying scientific information and converting it into practical, culturally relevant advice, Mr. Singh explains. Supported by expert insights, public-awareness campaigns, and collaborations with nutritionists, Hello Protein strives to make protein education both accessible and engaging.

The movement is expanding through digital content, community



outreach, and partnerships with healthcare providers, food brands and educational institutions. “With Hello Protein, we hope to catalyse lasting behavioural change – helping millions shift from carbohydrate – heavy patterns to balanced protein – rich habits that build stronger bodies, sharper minds and a more resilient nation,” Mr. Singh says.

Elaborating his philosophy, Mr. Singh says that protein is not merely a dietary component but a strategic resource. Healthier children learn better, healthier adults work better, healthy communities power economies. Mr. Singh's vision states that, India's journey toward becoming a stronger nation begins with a stronger plate.

He believes nutrition is inseparable from progress. “Nutrition, sustainability and national enrichment go hand in hand. Every unit of protein is a unit of national wealth. When a country achieves protein sufficiently, it strengthens not just its people – but its prosperity.”

He focuses on the fact that protein is not a fitness fad – it is a building block of life. Every cell, enzyme, muscle fibre and hormone depends on it. It repairs tissues, builds immunity, supports cognitive function and provides sustained energy. When protein falls short, energy dips, clarity blurs and long term health deteriorates.

While India is obsessed with expensive health supplements, the simplest answers lie in affordable, accessible foods: eggs and chicken. A single egg provides high-quality, complete protein with all nine essential amino acids. A serving of chicken offers nearly 27 grams of lean protein – one of the most efficient and economical sources available.

However, the poultry sector is shrouded with many myths. Many avoid eggs fearing cholesterol; others label chicken “unhealthy.”

At the current ICFA roundtable dialogue, Director General, Dr. Tarun Shridhar comments, “The poultry sector continues to face hygiene and food safety challenges, despite significant progress that affect consumer confidence. Strengthening food safety and assurance systems from feed quality and antibiotic stewardship to processing hygiene and traceability is essential

to protect public health and unlock higher domestic and export demand.”

ICFA seeks to convene this dialogue as a neutral platform to align nutrition goals, public health priorities and a responsible poultry industry, positioning safe and affordable protein as a building block of Prime Minister's Viksit Bharat pledge.

The roundtable is discussing, the role of poultry in protein security by:

- i. Improving child and maternal nutrition through regular egg consumption which supports growth, cognitive development and immunity
- ii. Providing cost effective protein compared to other animal sources, making it accessible to economically vulnerable population
- iii. Supporting dietary diversity, a key requirement for tackling malnutrition and lifestyle-related diseases

Dr. Shridhar further elaborates, “Poultry egg and meat, besides



being the richest source of affordable and accessible protein, are also the most versatile of globally accepted food ingredients which help create most amazing mouthwatering cuisine. This aspect too, besides the health and well-being traits, should be prominently highlighted at every poultry promotional activity.”

India’s robust poultry ecosystem, of every egg and chicken dish is a healthy connection of producers, processors and consumers. Producers or poultry farmers ensure healthy, well-fed flocks through climate-controlled sheds, automated systems and precision nutrition. Processors maintain hygiene, safety and packaging standards that bring clean, ready-to-cook products to customers. Consumers, increasingly conscious of hygiene and traceability, are driving demand for safer, processed poultry.

Today, the Indian poultry sector is valued at over Rs. 2 Lakh Crore, that matches global benchmarks in productivity and operational excellence. India now ranks third globally in egg production and fourth in chicken production – a testament to the dedication of farmers, integrators and industry stakeholders working to feed a growing nation and its young population.

Another crucial factor influencing protein intake is women’s role in household decision-making. The ICRISAT conducted study found that households where women had higher levels of education were more likely to consume a balanced diet. Educated women were better equipped to make informed food choices and prioritised nutrition for their families. This finding reinforces the need to invest in female education and empowerment as a strategy for improving household nutrition.

The researchers also examined the role of government policies in shaping dietary patterns. India’s Public Distribution system (PDS), which provides subsidised food grains to two-thirds of the country’s population, has been successful in improving calorie intake. However, it has inadvertently reinforced a diet dominated by cereals while failing to provide sufficient protein-rich options. The ICRISAT study revealed that access to PDS food grains positively impacted protein intake, underscoring the system’s importance. Thus, researchers recommend increasing the inclusion of pulses, millets and other protein dense foods in government food programs to significantly improve nutritional outcomes.

This recommendation aligned with the Government of India’s Union Budget for 2025-26, which prioritised enhancing pulse production to ensure food and nutritional security.

Another key finding of the study is that the factors that influenced households’ protein consumption varied across

districts and states. Thus, region-specific strategies would be needed to promote balanced nutritional intake. Dr. Shalander Kumar, the study’s lead researcher and Deputy Global Research Program Director of the enabling Systems Transformation Program at ICRISAT, emphasised that while India has made significant strides in food production, simply increasing the food supply will not address the issue. The study highlights the need for more comprehensive solutions beyond production alone. “Without targeted efforts to promote diverse diets and educate communities on the importance of protein, malnutrition will persist,” Dr. Kumar noted.

The researchers call for a multi-pronged approach: integrating nutrition education into public health programs and school curricula, empowering women, improving access to protein-rich foods through government schemes and encouraging farmers to grow a wider variety of nutrient-dense crops promoting local food systems. He highlighted ICRISAT’s innovative research and partnerships, which can help deliver higher-yielding, climate-resilient pulse varieties and sustainable farming practices, in support of the Government of India’s thrust toward improved nutrition and self-reliance in pulse and oil seed production.

While the ICFA roundtable aims to set a definitive goal setting with the following on agenda:

- Position poultry protein as a core component of India’s nutrition security strategy
- Identify policy and regulatory gaps affecting hygiene, safety and consumer trust
- Promote science-based standards for biosecurity, antibiotic use and processing hygiene
- Explore practical models for traceability and transparent labeling to reassure consumers
- Highlight mechanisms to keep poultry protein safe, affordable and accessible for all income groups

And Mr. Singh’s Hello Protein suggests, further implementation and inclusion of working adults into nutrition policies, like the programs of Mid-Day meals and Anganwadi centers have improved protein intakes among children in schools etc. He urges corporate India to actively participate by serving balanced, protein-rich meals at corporate cafeterias. HR teams to organise nutrition-literacy sessions and food delivery platforms to highlight healthier, protein-forward options. Wellness and health conscious programs to include dietary education alongside fitness regimes and gym memberships. Simple and affordable solutions like adding a minimum egg protein to meals can change India to a healthier workforce of tomorrow, from a welfare goal to a business advantage.



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BEST ACHIEVERS

JANUARY-2026

Northern Region

COMPANY: Sampoorna Feeds FARMER NAME: Mr. Ratnesh Kumar Patel 	JANUARY-2026	Top #1
	Farm Type	Open House
	State	UTTAR PRADESH
	Chicks Placed	2520
	Mean Age	32.2
	Avg Body Wt	2576
	FCR	1.400
	cFCR	1.272
	Livability%	95.5
	Daily Gain	79.9
EPEF	545.3	

Eastern Region

COMPANY: IB Group FARMER NAME: Mr. Kanailal Maiti 	JANUARY-2026	Top #1
	Farm Type	Open House
	State	WEST BENGAL
	Chicks Placed	1827
	Mean Age	37.0
	Avg Body Wt	2805
	FCR	1.431
	cFCR	1.252
	Livability%	97.4
	Daily Gain	75.8
EPEF	515.8	

Central Region

COMPANY: Japfa FARMER NAME: Mr. Omkar Jalinder Jadhav 	JANUARY-2026	Top #1
	Farm Type	EC House
	State	MAHARASHTRA
	Chicks Placed	10171
	Mean Age	32.1
	Avg Body Wt	2440
	FCR	1.372
	cFCR	1.274
	Livability%	97.4
	Daily Gain	76.0
EPEF	539.4	

South Region

COMPANY: IB Group FARMER NAME: Mr. Gudi Venkateshwara Rao 	JANUARY-2026	Top #1
	Farm Type	EC House
	State	ANDHRA PRADESH
	Chicks Placed	19962
	Mean Age	34.0
	Avg Body Wt	2463
	FCR	1.408
	cFCR	1.305
	Livability%	97.4
	Daily Gain	72.4
EPEF	501.2	

JANUARY-Top PERFORMANCE BY AREA

Area	Chicks Placed	Mean Age	BW	FCR	cFCR(2Kg)	Livability%	Daygain	EPEF
North EC House	15564	40.0	3100	1.464	1.220	95.3	77.5	504.5
North Open House	2520	32.2	2576	1.400	1.272	95.5	79.9	545.3
East EC House	9980	38.0	2934	1.473	1.265	96.1	77.2	503.9
East Open House	1827	37.0	2805	1.431	1.252	97.4	75.8	515.8
Central EC House	10171	32.1	2440	1.372	1.274	97.4	76.0	539.4
Central Open House	1891	34.0	2480	1.441	1.334	95.0	72.9	481.0
South EC House	19962	34.0	2463	1.408	1.305	97.4	72.4	501.2
South Open House	9969	34.0	2405	1.391	1.301	95.4	70.7	484.9

JANUARY-Top 10 FIELD PERFORMANCE

Flock	Farm Type	State	Chicks Placed	Mean Age	BW	FCR	cFCR	Livability%	Day Gain	EPEF
Flock 1	OPEN HOUSE	PUNJAB	2520	32.2	2576	1.400	1.272	95.5	79.9	545.3
Flock 2	OPEN HOUSE	PUNJAB	5478	35.6	2802	1.400	1.222	96.2	78.8	541.7
Flock 3	OPEN HOUSE	HIMACHAL PRADESH	3574	32.1	2453	1.380	1.279	97.5	76.4	540.1
Flock 4	EC HOUSE	MAHARASHTRA	10171	32.1	2440	1.372	1.274	97.4	76.0	539.4
Flock 5	OPEN HOUSE	MAHARASHTRA	5102	34.2	2661	1.430	1.283	97.5	77.8	530.7
Flock 6	OPEN HOUSE	PUNJAB	1655	34.6	2640	1.400	1.258	97.2	76.3	529.2
Flock 7	OPEN HOUSE	MAHARASHTRA	1657	34.0	2592	1.400	1.268	96.7	76.2	526.8
Flock 8	OPEN HOUSE	PUNJAB	4596	35.0	2720	1.410	1.250	95.5	77.7	526.6
Flock 9	OPEN HOUSE	MAHARASHTRA	8615	35.0	2497	1.330	1.220	97.2	71.4	521.6
Flock 10	OPENHOUSE	PUNJAB	5488	35.1	2659	1.390	1.244	95.5	75.8	521.0

Product Feature

Efficacy of PHYTOGIC on the Performance of Commercial Broilers Under Field Conditions



Abstract

The progressive ban on in-feed antibiotic growth promoters (AGPs) has accelerated the need for efficacious phytogetic alternatives capable of sustaining growth and intestinal health in modern broiler production.

PHYTOGIC, a standardised phytogetic formulation derived from *Macleaya cordata* extract and enriched with benzyloisoquinoline alkaloids (primarily sanguinarine and chelerythrine), exhibits potent antimicrobial and anti-inflammatory activity, including suppression of the HMGB1-TLR4-NF- κ B axis. This field study investigated the effects of dietary PHYTOGIC on growth performance of commercial Vencobb 430 broilers raised on deep litter under high ambient temperature stress (42–45°C). A total of 36,000 chicks were allocated to two treatments: a basal diet (T1) and the basal diet supplemented with PHYTOGIC at 150 g/ton (T2). Performance indicators, including body weight, feed intake (FI), feed conversion ratio (FCR), corrected FCR (CFCR), and mortality, were monitored over a 42-day production cycle. PHYTOGIC supplementation significantly improved final body weight (2291 g vs. 2110 g; +8.22%) and feed efficiency (FCR: 1.75 vs. 1.80; CFCR: 1.67 vs. 1.77), accompanied by a moderate increase in FI (+5.50%). Mortality remained statistically comparable between groups, indicating no detrimental physiological effects. These results demonstrate that PHYTOGIC enhances nutrient utilisation and growth performance under challenging production conditions, supporting its potential as a viable phytogetic replacement for AGPs in commercial broiler systems.

Introduction

The extensive use of antibiotic growth promoters (AGPs) in animal feed has contributed to antimicrobial resistance and ecological damage, posing risks to human health. As a result, plant-based alternatives have gained attention for their safety, efficacy, and availability (Songchang *et al.*, 2021). Necrotic enteritis (NE), mainly caused by *Clostridium perfringens*, is a significant enteric disease in poultry. Restrictions on in-feed antibiotics in regions such as the European Union and China have led to increased NE incidence (Shojadoost *et al.*, 2012), with mortality in young broilers reaching 50%. NE triggers elevated pro-inflammatory cytokines and chemokines (Lee *et al.*, 2011). Immune activation increases resting metabolic rate by 8–27%, diverting energy from growth (Martin *et al.*, 2003). Inflammation reduces feed intake, damages intestinal structure, impairs nutrient absorption, and causes economic losses (Klasing *et al.*, 1987). NE also disrupts gut microbiota, reducing

diversity and promoting pro-inflammatory bacteria (Satokari *et al.*, 2015). Dysbiosis weakens immune regulation and enhances pathogen virulence (Baumler *et al.*, 2016).

Macleaya cordata extract (MCE), containing sanguinarine and chelerythrine, was approved as a feed additive in the EU in 2004. Sanguinarine demonstrates antibacterial, anti-inflammatory, immunomodulatory, and antitumor properties (Fu *et al.*, 2018; Kumar *et al.*, 2014; Hamoud *et al.*, 2014; Xue *et al.*, 2017). MCE improves growth performance, gut health, and immunity (Khadem *et al.*, 2014), inhibits NF- κ B activation (Niu *et al.*, 2012), and is considered a promising AGP alternative (Kim *et al.*, 2012). Safe doses up to 5 mg/kg body weight have been reported (Kosina *et al.*, 2004).

Mechanism of Action of *Macleaya Cordata* Extract in Poultry Gut

Sanguinarine helps reduce inflammation by blocking key signals that trigger the body's inflammatory response. When cells are damaged, they release a protein called HMGB1, which acts as a danger signal and activates immune cells. Sanguinarine helps prevent the release of HMGB1 and reduces its ability to trigger inflammation. It also blocks a receptor called TLR4 on immune cells. Normally, TLR4 detects harmful signals like HMGB1 and activates further inflammatory pathways. By interfering with this receptor, sanguinarine stops the signal from spreading. In addition, sanguinarine inhibits NF- κ B, a major protein that turns on genes responsible for producing inflammatory chemicals. By preventing NF- κ B activation, sanguinarine reduces the production of pro-inflammatory cytokines such as TNF- α , IL-6, and IL-1 β . Sanguinarine exerts anti-inflammatory effects by targeting the HMGB1-TLR4-NF- κ B signaling axis at multiple levels. Overall, sanguinarine lowers inflammation, limits tissue damage, and helps protect organs, especially in inflammatory conditions of the gut and other tissues (Gu *et al.*, 2022).

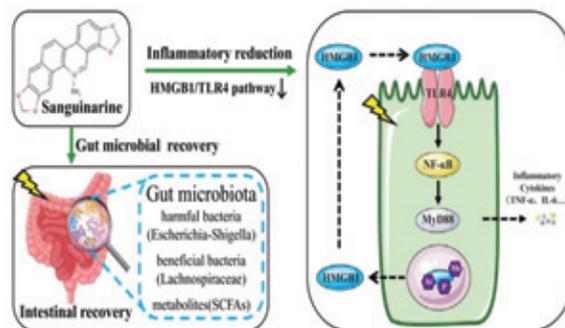


Image 1: Anti-inflammatory mechanism of Sanguinarine showing reduction of gut lesion by interference of HMGB1 (High Mobility Group Box 1)/ TLR4 (Toll-like receptor4) pathway in inflammation site

The aim of the study was to evaluate the effect of PHYTOGIC on the performance of commercial broilers reared on deep litter under field conditions.

Materials and Methods

Experimental Design and Management

The trial was conducted at Harsh Broiler House using Vencobb 430 straight run chicks (not sexed at hatchery) in three treatments of around 12000 birds in each treatment. A total of 36000 birds were considered for trial purpose. Feed formulation used was same for all treatment groups except in T2 where PHYTOGIC was added at 150 gm per ton feed respectively in all stages. (Table 1.) In the study, the energy level was equivalent to the standard requirements of broilers recommended in the Vecobb 430. The trial was carried out over a period of 42 days. The birds were fed ad lib feed and water was available all the times. Care was taken to provide good conditions by adopting strict biosecurity measures. The housing and vaccination procedures were same in both groups.

Table 1. Composition of basal diet for broiler chicks in control group for 3 phases

Broiler Feed Formulation (Control)			
Raw Materials	Prestarter	Starter	Finisher
Maize	625.15	652.75	686.65
HiPro Soya	335	300	260
Soya Crude Oil	6	14	23
Limestone Powder	8.5	8.5	8
L Lysine HCl	2.7	2.4	2.3
DL Methionine	3.3	3	2.7
L Threonine	1	1	1
Salt	2.5	2.5	2.5
Soda Bi Carb	1.5	1.5	1.5
Choline Chloride 60%	1	1	1
Organic TM	0.5	0.5	0.5
Broiler Vitamin Premix	0.5	0.5	0.5
Cocciostat	0.5	0.5	0.5
AGP	0.05	0.05	0.05
NSP Enzyme	0.1	0.1	0.1
Phytase 5000	0.1	0.1	0.1
Feed Acidifier	1	1	1
Toxin Binder	0.6	0.6	0.6

*The figures are in Kilograms

The premix provided the following per kilogram of the diet: vitamin A, 6000 IU; vitamin D3, 2500 IU; vitamin B1, 1.75 mg; vitamin B2, 5.5 mg; vitamin B6, 4 mg; vitamin B12, 0.18 mg; vitamin E, 25 mg; vitamin K3, 2.25 mg; Cu, 7.5 mg; Mn, 60 mg; Fe, 75 mg; Zn, 60 mg; Se, 0.15 mg; biotin, 0.14 mg; NaCl, 3.7 g; folic acid, 0.8 mg; pantothenic acid, 12 mg; phytase, 400 U; nicotinic acid, 34 mg; chloride, 350 mg. *Nutrient levels were all calculated values.

Treatment Details

T1: Control group fed basal diet

T2: Control group fed basal diet + PHYTOGIC @150 g PMT

Parameters Studied

1. Body weight gain was recorded weekly
2. Feed consumption recorded daily and leftover feed was adjusted in the other day quota to know actual intake

3. Mortality was recorded daily
4. EEF calculated post harvesting of the flock
5. FCR was calculated every week and post harvesting of the flock.

Results

Effect of Supplementation of Phytogic on body growth performance parameters like body weight, feed consumption, FCR and average daily gain of control and treatment groups

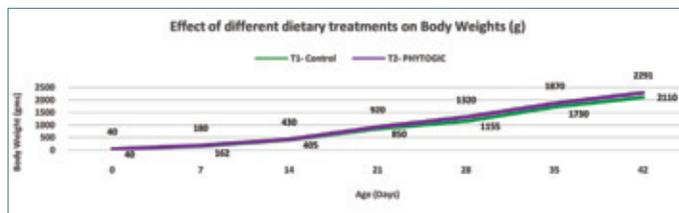


Fig.1: Effect of different dietary treatments on Body Weights (g)

Conclusion: Broilers in the T2 - PHYTOGIC group fed at 150g/ton of feed achieved higher final body weights (2291 g) compared to the T1 - Control group (2110 g), showing an 8.22% improvement. This indicates that PHYTOGIC supplementation effectively enhances growth performance in broilers.

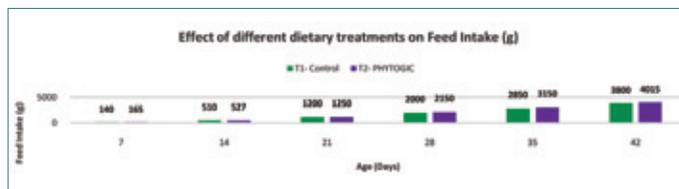


Fig. 2: Effect of different dietary treatments on Feed Intake (g)

Conclusion: Broilers in the T2 - PHYTOGIC group fed at 150g/ton of feed consumed more feed (4015 g) compared to the T1 - Control group (3800 g), showing a 5.50% increase in feed intake. This suggests that PHYTOGIC supplementation may enhance feed consumption in broilers.

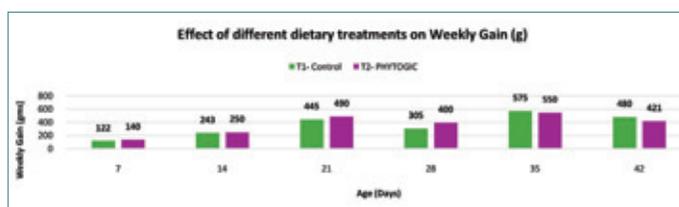


Fig. 3: Effect of different dietary treatments on Weekly Gain (g)

Conclusion: The average weekly percentage difference in weight gain between T2 - PHYTOGIC fed at 150g/ton of feed and T1 - Control was -3.84%, indicating that, overall, PHYTOGIC supplementation did not improve weekly weight gain in broilers and was slightly less effective than the control in this trial.

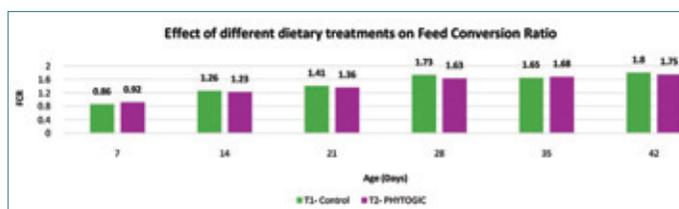


Fig. 4: Effect of different dietary treatments on Feed Conversion Ratio

Conclusion: Broilers in the T2 - PHYTOGIC group fed at 150g/ton of feed showed an improved feed conversion ratio (1.75) compared to the T1 - Control group (1.80), with a 2.81%

improvement. This suggests that PHYTOGIC supplementation enhances feed efficiency in broilers, allowing for better weight gain per unit of feed consumed.

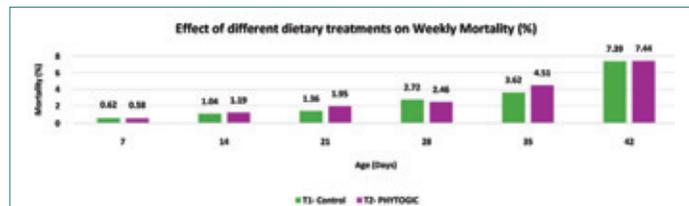


Fig. 5. Effect of different dietary treatments on Weekly Mortality (%)

Conclusion: The mortality rate in the T2 – PHYTOGIC group fed at 150g/ton of feed was (7.44%) slightly higher than the T1 – Control group (7.39%), with a 0.27% difference. This minimal variation indicates that PHYTOGIC supplementation had no significant effect on broiler mortality under the conditions of this study.

Table 2. Summary of the Report			
Parameters	T1- Control	T2- PHYTOGIC	% Difference
Body Weight (g)	2110	2291	8.22
Feed Intake (g)	3800	4015	5.50
FCR	1.80	1.75	2.81
CFCR	1.77	1.67	5.81
Mortality (%)	7.39	7.44	0.27

Discussion

The findings of the present field study demonstrate that dietary supplementation with PHYTOGIC at 150 g/ton improved broiler growth performance under commercial deep-litter and heat-stress conditions. Broilers receiving PHYTOGIC exhibited an 8.22% increase in final body weight compared to the control group, indicating enhanced nutrient utilisation and metabolic efficiency. This improvement is consistent with previous reports showing that *Macleaya cordata* extract and its major alkaloid, sanguinarine, can promote growth by reducing intestinal inflammation, stabilising gut microbiota, and improving nutrient absorption. The observed increase in feed intake (5.50%) in the PHYTOGIC group suggests that phytogetic supplementation may have positively influenced appetite or gut comfort, allowing birds to maintain adequate consumption despite environmental temperature stress.

Feed efficiency was also improved, as evidenced by reductions in FCR (1.75 vs. 1.80) and CFCR (1.67 vs. 1.77). This aligns with earlier studies reporting that sanguinarine-containing extracts suppress inflammatory pathways such as the HMGB1-

TLR4-NF-κB axis, thereby reducing metabolic energy waste associated with immune activation. By lowering the inflammatory burden, PHYTOGIC likely allowed more dietary energy to be directed toward growth rather than immune-related maintenance. Improvements in FCR also support the hypothesis that phytogetic compounds enhance gut function through modulation of intestinal morphology and beneficial microbiota populations, as reported in previous research.

Weekly weight gain patterns showed some variation, with PHYTOGIC not consistently outperforming the control in all weeks. This may be attributed to fluctuating heat stress levels and daily feed intake variations typical of field conditions. However, despite these short-term variations, the cumulative performance benefits remained substantial by the end of the production cycle.

Importantly, mortality rates were nearly identical between treatments (7.39% vs. 7.44%), indicating that PHYTOGIC supplementation did not impose any negative health effects and is safe for use under commercial conditions. The lack of impact on mortality also suggests that the performance improvements were not driven by survivability differences but by true enhancement of growth and feed efficiency.

Overall, the results support the potential of PHYTOGIC as an effective phytogetic alternative to antibiotic growth promoters. Its ability to improve growth performance and feed efficiency, even under extreme heat, aligns with its known anti-inflammatory, antimicrobial, and gut-modulating properties. The findings strengthen the evidence that phytogetic compounds derived from *Macleaya cordata* can contribute to sustainable poultry production by enhancing physiological resilience and intestinal health.

Conclusion

The trial was conducted in the extreme heat season where average temperature in the surrounding was around 42-45°C. The T2 (PHYTOGIC) groups showed overall improved performance compared to the T1 (Control) group. Specifically, the body weight of T2 (PHYTOGIC) was 8.22% higher than T1 (Control), indicating better growth. Feed Conversion Ratio (FCR) and Corrected FCR (CFCR) were both lower in T2 (PHYTOGIC) by 2.81% and 5.81%, respectively, demonstrating more efficient feed utilisation in the T2 (PHYTOGIC) group than T1 (Control). Mortality rates were nearly identical between the two groups, indicating that the supplement did not adversely affect survival. Overall, PHYTOGIC supplementation resulted in better growth performance and feed efficiency compared to the control with no significant impact on mortality.

(References on Request)





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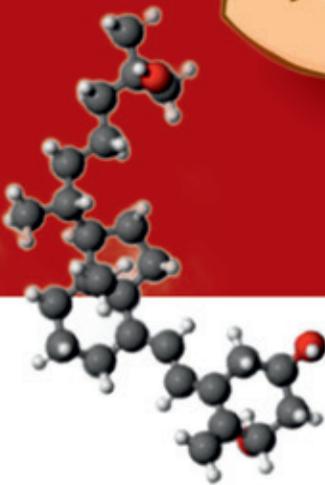
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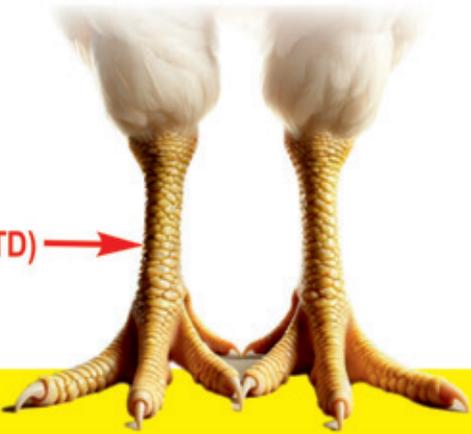


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Saudi Arabia Bans Poultry Imports From 40 Countries

Saudi authorities have tightened controls on poultry and table egg imports in one of the most extensive updates in recent years. The revised import list confirms that imports from 40 countries are fully banned, with additional regional restrictions imposed on 16 other nations amid ongoing global disease concerns.

The decision was issued by the Saudi Food and Drug Authority as part of precautionary measures aimed at protecting public health and reinforcing food safety in the local market.

The authority stressed that the list of restricted countries is subject to periodic review in line with global health developments. It confirmed that some of the ban decisions have been in effect since 2004, while other countries were added progressively over the years based on updated risk assessments and international reports concerning animal diseases.

Among the primary concerns cited are outbreaks of highly pathogenic avian influenza. The approach reflects continuous monitoring of the global epidemiological situation and regulatory adjustments based on evolving disease patterns.

The authority clarified that poultry meat and related products that have undergone heat treatment or other processing methods sufficient to eliminate the bird flu or Newcastle disease virus may be exempt from the temporary ban.

Egypt One of Africa's Poultry Powerhouses

In his 10th and final article in this series, Sebastiane Ebatamehi from The African Exponent gives a comprehensive overview of the country in the 1st position in the top 10 poultry producing countries in Africa in 2025: Egypt.

Egypt's poultry sector continued to stand out as the leading producer on the African continent in 2025, with production in recent years (2023/2024) estimated in the range of 1.7 and 1.8 million metric tonnes (mmt), and industry forecasts projecting further growth toward approximately 1.9 mmt by 2028.



INTERNATIONAL

While the widely cited figure of approximately 2.6 million tonnes in 2024 suggests Egypt may already have closed much of that gap, multiple sources and national government projections agree on a consistent upward trajectory supported by long-standing investment, domestic demand, and expanding export capacities. These trends reflect not only production volume but also capacity improvements in broiler operations, hatcheries, and feed industries.

Consumption growth in Egypt has been among the fastest in Africa. Recent reports note that Egypt's poultry meat consumption CAGR over the last decade is approximately +5.7%, outpacing many peer nations. The per capita consumption of chicken in Egypt is estimated at about 24 kg per person per year, placing it high among African countries (South Africa is higher, around 37 kg/person).

Furthermore, egg consumption is robust, and broiler production reportedly covers nearly 97% of national demand, according to ministry data. These demand-side drivers create both opportunities and pressure for producers to maintain quality, price stability, and supply chain reliability.

Regulatory and policy interventions have played a large role in shaping Egypt's poultry landscape. In 2025, the Egyptian government launched a US\$ 3.3 million poultry equipment assembly project in West Qantara, building equipment like battery cages and climate control systems locally to cut import dependence and reduce production costs.

This is particularly important as many producers have been squeezed by rising feed, vaccine costs, and currency volatility.

Additionally, the Ministry of Agriculture and Land Reclamation issued over 13,200 licenses in 2024 for livestock, poultry, and feed projects, including around 550 projects in desert expansion zones demonstrating a strategy to expand production beyond traditional areas.

Such licensing supports both large commercial farms and smaller breeders, and strengthens regulatory oversight and biosecurity. Measures to increase production in rural or desert zones, link finance (through national banks) to poultry projects, and ensure export-compliant facilities are underway.

Egypt currently employs about 3.5 million people in its poultry and related sectors, making it a major source of rural and semi-rural employment; its push for self-sufficiency in poultry and egg production reduces dependence on imports and strengthens food security.

Exports are rising once again, after previous disruptions from avian influenza, with certified facilities now approved to ship poultry products to over 20 countries across Asia, Africa, and the Arab world.

However, challenges remain: local producers are competing with frozen imports, which lowers prices and margins; power cuts, high temperature spikes, and feed supply issues add instability.

If Egypt can continue to scale its integrated operations and invest in local input industries (especially feed), and preserve its regulatory gains, it will not only consolidate its top producer status but also serve as a template for other African countries aiming to industrialise their poultry sectors.

IPR Espresso

IPEMA-Poultry India's Action-Filled February

It has been a busy February for Team IPEMA-Poultry India with a lot of action over World Protein Day, the 26th AGM of Broiler Breeder Association North and Agri Show Hyderabad 2026.

On 27th February, IPEMA-Poultry India supported by the National Egg Coordination Committee (NECC), celebrated World Protein Day 2026 at SkyKings Football Academy, Secunderabad, emphasising the importance of protein in building strength, supporting growth, and maintaining overall health. Uday Singh Bayas, President of IPEMA-Poultry India, reiterated the association's commitment to promoting nutritional awareness through the poultry sector. "India today produces over 130 billion eggs and around 5 million metric tonnes of broiler meat annually, making poultry one of the most affordable and high-quality sources of protein available to the population. Through such initiatives, IPEMA-Poultry India continues to promote the importance of protein-rich diets and contribute towards strengthening the country's nutritional security," he commented. Eggs were distributed to aspiring trainee footballers at the academy to encourage healthy dietary habits among young athletes. In addition, footballs were presented to the young participants as a gesture of encouragement and support for sports and fitness, while simultaneously spreading awareness about the role of protein and poultry nutrition in maintaining a balanced diet.



IPEMA-Poultry India supported the 26th Annual General Meeting (AGM) of the Broiler Breeders Association - North (BBAN) Held on 27th and 28th February, bringing together poultry breeders, industry leaders, entrepreneurs and stakeholders from across North India to discuss the growth, opportunities and future of the broiler breeding sector. In his address, Mr. Bayas emphasised that the rising demand for affordable protein, adoption of modern farm technologies, improved genetics, enhanced feed efficiency and stronger breeder networks have significantly contributed to the expansion of the poultry sector in the region. He also highlighted the importance of continued collaboration among breeders, integrators, equipment manufacturers, feed companies, pharmaceutical firms and policy stakeholders to ensure sustainable and profitable growth for the industry. Mr. Bayas further reiterated the vision of IPEMA - Poultry India in bridging industry and academia, creating awareness about protein nutrition and encouraging technological advancement across the poultry value chain. "Unity is strength. Together, we move towards stronger breeder networks and affordable protein for every Indian household," added Mr. Bayas.

NATIONAL



IPEMA - Poultry India participated in AGRI SHOW Hyderabad, held from 20th to 22nd February. The exhibition witnessed impressive footfall at the IPEMA stall with farmers, agri-entrepreneurs and industry stakeholders actively engaging with the team and exploring opportunities within the poultry sector.

The participation provided an excellent platform for IPEMA - Poultry India to highlight the growth potential of the poultry industry and strengthen linkages between agriculture and poultry stakeholders. Visitors to the stall interacted with the IPEMA team to learn about industry developments, technological advancements, and the role of poultry in enhancing farmer livelihoods.



Dr. Amit Patra Joins Vetline

Dr. Amit Patra, a seasoned professional of the Indian poultry sector, recently joined Vetline as General Manager - Sales & Marketing. He will be based at Indore.

Dr. Patra holds an M.V.Sc. in Animal Nutrition from West Bengal University of Animal & Fishery Sciences, Kolkata, and has also completed Post Graduate Diploma in Marketing Management (PGDMM). With over two decades of extensive experience in the poultry and dairy industries, he brings a strong blend of technical expertise and strategic marketing acumen to the organisation.



Event

IPR Knowledge Review, Coimbatore Focuses on Disease Dynamics in Modern Poultry



The Coimbatore edition of IPR Knowledge Review was organised at Le Meridien on Saturday, 21st February on a theme that sits at the very heart of sustainable poultry production - “Disease Dynamics and Control Strategies for Modern Poultry Production.”

The event brought together poultry farmers, veterinarians, nutritionists, consultants and industry stakeholders. With disease challenges becoming increasingly complex due to evolving pathogens, climate variability and intensified production systems, the seminar created a platform for knowledge exchange and practical insights.

In his Guest of Honour’s address Uday Singh Bayas, President IPEMA-Poultry India traced the origin and remarkable growth

IPR Knowledge Review

journey of Poultry India. He showcased how the expo, which began as a focussed industry initiative, has steadily evolved into the definitive business and technology platform for the Indian poultry sector. Emphasising collaboration, innovation and global participation, he noted that Poultry India today stands as the flagship exhibition of the country’s and indeed South Asia’s poultry industry – reflecting its scale, progress and growing international relevance.



BROILER CO-ORDINATION COMMITTEE



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The second Guest of Honour, Saravanan Chinnasamy, South Zone President, CLFMA of India underscored the critical link between feed quality, disease resilience and farm profitability. He highlighted the evolving challenges faced by poultry producers, particularly in the context of feed raw material volatility. He congratulated the organisers for arranging a seminar on a theme

that is of critical importance for the industry.

Delivering the Keynote Address, Prof. (Dr.) P. K. Shukla, President, Indian Poultry Science Association & Professor and Head, Department of Poultry Science, College of Veterinary Science and Animal Husbandry, DUVASU, Mathura underscored the relevance of the theme on disease dynamics and control





in modern poultry production, noting that rapid intensification has increased both productivity and vulnerability. He traced the evolution of India's poultry sector from backyard egg production in the 1970s to organised meat production in the 1980s, value addition in the 2000s, and a recent focus on climate resilience and animal welfare. While advancements in genetics, vertical integration, and high stocking densities have driven growth, they have also heightened disease risks. He explained that disease emergence results from the interaction between the host, pathogen, and environment. Disruptions caused by intensive farming, rapid flock turnover, farm proximity, live bird markets, and weak biosecurity, particularly in backyard systems, create conditions for outbreaks. Though commercial operations contribute the majority of production, the unorganised sector remains a critical vulnerability. Highlighting major viral, bacterial, parasitic, and fungal threats, Prof. Shukla emphasised that climate change, heat stress, and humidity further compromise immunity and pathogen control. He called for a shift from reactive treatment to proactive prevention through strict biosecurity, sanitation, litter and carcass management, and improved hatchery and feed mill hygiene. He further stressed the need for region-specific disease mapping, customised vaccination protocols, proper cold chain management, and active surveillance. Nutrition, precision farming, advanced diagnostics, digital monitoring, and responsible antibiotic use were identified as essential tools. Prof. Shukla concluded that no single intervention can control disease. An integrated strategy combining research investment, digital technologies, infrastructure development, surveillance strengthening, and public-private collaboration is vital to reduce disease burden, enhance productivity, and ensure sustainable growth in the poultry sector.

The seminar was marked by insightful presentations:

Dr. Damodar Pattah Veterinary Health & Husbandry Specialist	Dynamic Poultry Health - A Nutritional Perspective
Dr. Sumon Nag Chowdhury Associate General Manager, Technical & Marketing Glamac International Pvt. Ltd.	Strengthening Mucosal Immunity to Fight Against Virus
Mr. Spencer Hsu International Sales Manager SenMu Co. Ltd.	
Mr. Prashant Kumar Co-founder & Director Sapience Group	Data-Driven Disease Monitoring and Predictive Health Management
Mr. T. Srinithi Executive Director Amrit Breeder Farms Pvt. Ltd.	Environmental Management and Its Impact on Disease Control in Tropical Poultry Operations
Mr. Rulesh S. Kherde Managing Director Yaashvan Veterinary Services	Water Health - A Pillar of Sustainable Poultry Farming
Dr. V. Gowthaman Associate Professor Tamil Nadu Veterinary and Animal Sciences University	Antimicrobial Resistance (AMR) in Poultry: Implications for Health, Trade and Sustainability
Dr. Narahari Founder & CEO NH ProPOWER Consultancy Services	Integrated Disease Control Strategies in Indian Poultry: Farm to Plant Approach
Dr. Satyam Sharma Product Manager - Intestinal Health Kemin Industries South Asia	Pathogens and Beyond : Challenges & Solutions for a Resilient Poultry Gut
Dr. P. Mohitha, Nanotechnology Specialist Orgonew	Nanotechnology in Poultry & Animal Husbandry Domains - Enhancing Nutrient Efficiency, Stability and Sustainability

Enriching the seminar with diverse insights were talks by R. Ramkutty, Chairman and Managing Director, Niswin Group and P. Valsan, Secretary, All India Poultry Products Exporters Association & Executive Committee Member, Tamil Nadu Poultry Farmers Association.

Mr. Ramkutty spoke about succession planning in family-run businesses through his talk titled, "The Founder's Dilemma: Letting Go Without Losing Control."

In his address, Mr. Valsan gave a brief overview of the scenario of export of poultry products from the country, particularly eggs and the challenges and opportunities thereof.

IPR Knowledge Review, Coimbatore was organised with the active cooperation of Broiler Coordination Committee (BCC) and CLFMA of India. Vets in Poultry (VIP) supported the event.





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Event

12th Kolkata International Poultry Fair 2026 Showcases Innovation and Industry Leadership



The 12th edition of the Kolkata International Poultry Fair, held from 11th to 13th February 2026, reaffirmed Eastern India's growing prominence as a poultry hub. Hosted at the Biswa Bangla Convention Centre and associated exhibition grounds, the event brought together policymakers, industry leaders, investors, and technical experts to deliberate on the future of poultry production and market expansion.

State Animal Resources Department Minister Swapan Debnath inaugurated the three-day fair, emphasising government initiatives aimed at making West Bengal self-sufficient in egg production. Senior dignitaries, including Pradip Mazumdar, Biplab Roy Chowdhury, and Birbaha Hansda were also attended the expo, underscoring strong institutional support for the sector.

Exhibitors highlighted advancements in feed nutrition, biosecurity, farm automation, hatchery solutions, and health management, with strong interest from poultry entrepreneurs across West Bengal, Odisha, Bihar, Jharkhand, and the North-East. The steady footfall and quality of business conversations reflected renewed confidence in the poultry sector, despite ongoing challenges related to input costs and disease management.

Participation from national bodies such as the Pan India Broiler Coordination Committee and the Eastern India Poultry Development Forum reflected the fair's collaborative spirit. Investors reportedly expressed interest in the region, with stakeholders advocating scientific methods to enhance chicken and egg output.



Preceding the exhibition, the international technical seminar NOVACON was held on 10th February as a full-day interactive forum featuring reputed speakers. Vivek Kumar, IAS, Additional Chief Secretary, Animal Resources Department, Government of West Bengal inaugurated the seminar.

Discussions centred on youth participation, sectoral upgradation, innovation, and strategies to increase production—setting a forward-looking tone for the fair.



Speakers at NOVACON this year were:

- **Dr. Stephane Lemiére**, Head of Global Technical Services, Boehringer Ingelheim AH-Poultry
- **T. Srinithi**, Executive Director, Amrit Breeder Farms Pvt. Ltd.
- **Dr. Mahesh P.S.**, Joint Commissioner & Director, CEAH, Bengaluru, Govt. of India
- **Tommy Lim**, Product Sales Manager, Climate, Big Dutchman Asia
- **Dr. S. S. Nadgauda**, Deputy General Manager, Technical, Venky's India Ltd.
- **Prof. Manik Chandra Pakhira**, Dept. of Avian Science, WBUAFS

The first and second sessions were moderated by Prof. (Dr.) P. K. Shukla, President, Indian Poultry Science Association & Professor and Head, Department of Poultry Science, DUVASU, Mathura and Dr. Arindam Chatterjee, Vice President -Strategy, Marketing & Technology, Optima Life Sciences respectively.

The NOVACON committee was chaired by Prof. Purnendu Biswas, former Vice Chancellor WBUAFS. Dr. Koushik De, Sales Director- Poultry, SCA, Novus Animal Nutrition coordinated the seminar.

Summing up the proceedings of NOVACON, Prof. (Dr.) P.K. Shukla reflected on the remarkable journey of the Indian poultry sector, describing its transformation from a small backyard activity into one of the most sophisticated and efficient biological production systems in the country. In 1950, India's total egg production stood at around 2 billion; today, it has risen to nearly 150 billion, an extraordinary growth story unmatched by many other agricultural sectors. He emphasised that this evolution represents not just expansion, but the foundation of a new protein revolution driven by science, scale, and structured development. He highlighted the importance of productivity enhancement, skill development, and the role of multiple stakeholders in strengthening the sector. Variations in regional consumption patterns were described as opportunities rather than challenges. Government investment in sectoral enterprises was appreciated as a progressive step that other states could emulate to promote organised growth and technological transformation at the grassroots level.



Prof. Shukla placed strong focus on scientific vaccination strategies, disease monitoring, and the urgent need to address antimicrobial resistance. He stressed that vaccination, biosecurity, and the judicious use of antibiotics are critical to safeguarding poultry health under the One Health framework, which integrates animal, human, and environmental health. He also discussed circular economy models, waste-to-wealth approaches, climate balance, hatchery management, and quality chick production as key drivers of long-term sustainability and profitability. Market volatility, branding, improved market access, and strategic investment were identified as pathways to better margins and global competitiveness. With India's growing population and high proportion of non-vegetarian youth, Prof. Shukla expressed confidence that poultry would play a vital role in ensuring affordable nutrition, economic growth, and stronger global positioning for the nation.



Organised by the West Bengal Poultry Federation in association with the state's Animal Resources Development Department, the fair continues to serve as a vital platform for innovation, networking, and business growth across the poultry value chain.









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Event

Aviagen India Organises Technical School 2026

Aviagen India hosted the Aviagen India Technical School 2026 on 9th and 10th February in Hyderabad, bringing together customer team members from across India along with leading global poultry experts and industry professionals. The two-day technical forum served as a focused knowledge-sharing platform aimed at enhancing breeder and broiler productivity through science-based management and collaborative learning.

The program covered critical aspects of modern poultry production, including genetics, applied physiology, nutrition, veterinary health, hatchery management and breeder services. Sessions emphasised the importance of aligning genetic potential with precision management practices to achieve consistent performance and sustainable growth.

Key topics included broiler breeder grading and feeding strategies to peak production, point-of-lay scoring, embryonic requirements and incubation management, optimal particle size in broiler nutrition, gut health scoring, and managing immunosuppressive challenges in breeder flocks. Hatchery-focused discussions addressed pipped embryo testing and data-driven breakout analysis, alongside updates on global R&D advancements and Ross 308 AP performance insights.

The event featured distinguished global and regional experts including:

- Santiago Avendano, Global Vice President, R&D
- Jens Lesuisse, Global Product Director
- Richard Bailey, Head of Applied Physiology
- Greg Hitt, Regional Technical Manager - Asia
- Scott Dawson, Regional Technical Veterinarian
- Michael ("Mike") Block, Technical Service Manager
- Jason Cormick, Hatchery Specialist
- Ruben Kriseldi, Poultry Nutrition Specialist
- Dr. R.V. Shantanavar, Sr. Technical Service Manager-Breeders
- Dr. Sivakumar Duraisamy, Sr. Technical Service Manager-Health
- Dr. Jayaraman, Poultry Consultant

Interactive quizzes and technical discussions encouraged engagement and practical application, ensuring that insights could be implemented effectively at the field level.

The Technical School highlighted Aviagen's commitment to delivering science-backed solutions and strengthening long-term partnerships in an effort to empower customers with the knowledge, tools and technical expertise needed to drive productivity, sustainability and performance excellence in a rapidly evolving poultry sector.



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Dr. Sayantani Sihi
Chief Scientific Officer
Agrivet Research and Advisory Pvt. Ltd.



Harish Murti
Managing Director
Numida BioCare Pvt. Ltd.



Vikash Deo
Director
Bhandari Group

Event

Bhuvana NBS India & APSA Spain Host Seminar in Guwahati

Bhuvana Nutribio Sciences India, in collaboration with Andres Pentaluba S.A. (APSA), Spain, organised its 4th Technical Seminar under the Bhuvana-Pentaluba Tech Series on 28th January at Guwahati. The seminar was conducted in association with the Directorate of Research, Assam Veterinary and Fisheries University (AVFU).

The seminar began with a welcome address by Dr. Manoj Kumar Dev Sarma, Director, Bhuvana NBS, who emphasised innovation-driven poultry health management and the growing strategic importance of the North East in achieving sectoral self-sufficiency. Dr. Prabodh Borah from the Directorate of Research, AVFU, highlighted the university's role in advancing poultry development and its economic potential in the region.

The keynote session by Dr. Abhijit Mishra on "Integrated Approach to Gut and Respiratory Health in Poultry" delivered practical, field-oriented strategies to enhance flock performance, disease resilience, and farm profitability.

Dr. Jyoti Kumar Mainali, Area Manager - Asia, APSA Spain, presented the company's global profile and research-driven portfolio, including APSAMIX TIAMULIN 10%, APSAVIT OVOSMART, APSA MIOCHEM, and APSA AMINOVIT. Dr. Santosh Ire, Director, Bhuvana NBS, showcased Bhuvana's innovative gut health solutions (GutPROP), antiviral technologies (ViroStat AML), Halquinol range, and specialised summer management products (Patented Chromiate C and Rosh C+).

The event concluded with a Vote of Thanks by Khanindra Nath Sarma, Business Manager - Bhuvana NBS (North East, Bhutan & Myanmar).

The seminar was anchored by Dr. Nikhil Adagale, General Manager, Bhuvana NBS.



Launch

Lohmann Forms Indian Arm to Support Growing Layer Industry



International Layer Distribution GmbH (ILD), part of the EW Group, Germany, recently announced the incorporation of Lohmann Layers India Private Limited (LLI).

A wholly owned subsidiary of ILD, Lohmann Layers India Pvt. Ltd. will strengthen Lohmann's presence in the country through direct engagement with the layer industry and farmers. The company will focus on delivering globally benchmarked layer genetics tailored to Indian farming conditions, while ensuring reliable, efficient, and nationwide distribution of Lohmann Layer stock.

As egg quality, production efficiency, and farm profitability gain prominence, Lohmann's globally recognised genetics are well positioned to support sustainable and profitable egg production across diverse Indian markets.

As part of its strategic expansion, Lohmann Layers India Pvt. Ltd. has taken over JK Breeders Pvt. Ltd. (JKB)

and will now manage the commercial distribution of Lohmann Layer Day-Old Chicks (DOC) throughout India. The transition is designed to ensure continuity of supply, closer customer engagement, and enhanced operational efficiency for poultry enterprises nationwide.

With direct management of commercial DOC distribution, Lohmann Layers India aims to deepen collaboration with Indian layer farmers, providing consistent access to genetically advanced, high-quality chicks backed by Lohmann's global breeding expertise and technical support framework.

Speaking on the launch of Lohmann Layers India Pvt. Ltd., Antonio Paraguassu, Managing Director –ILD Asia, Australia, & Director - Lohmann Layers, said, "India is one of the world's most important and fastest-growing poultry markets. The establishment of Lohmann Layers India Pvt. Ltd. reinforces our long-term commitment to Indian farmers. By

combining proven genetics, consistent supply, and technical excellence, we aim to support sustainable and profitable egg production across the country.”

The formation of Lohmann Layers India Pvt. Ltd. reflects Lohmann Layers’ broader vision to deepen market engagement in India, invest in breed development suited

to Indian production systems, and build strong, long-term partnerships across the poultry value chain. Aligning with the vision of the Hon’ble Prime Minister of India, Shri Narendra Modi, to double farmers’ income, Lohmann Layers India Pvt. Ltd. is committed to improving the profitability of Indian layer farmers by

providing world-class genetics, reliable supply, and strong technical support, enabling better productivity and long-term economic sustainability,” commented Dr.Surendra K.Jangir, Managing Director – India, Lohmann Layers.



Announcement

Hy-Line Introduces Nova-Tech's Latest Hatchling Support Technology

At the International Production & Processing Expo 2026 in Atlanta, Hy-Line International announced the signing of a new agreement to introduce advanced hatchery technology at its Indian operations, Hy-Line Layers Private Limited (Hy-Line India). The contract was formalised between Jonathan Cade, President of Hy-Line International, and Landon Fries, President of Nova-Tech Engineering, LLC, for the supply of Nova-Tech's latest Hatchling Support System.

The technology will be deployed to support Hy-Line's parent stock customers in India. Nova-Tech's Hatchling Support System integrates advanced infrared beak treatment (IRBT) technology with an automated injection platform designed to deliver precise, consistent early-life care. The investment reflects Hy-Line's continued focus on innovation in poultry breeding and hatchery management.

By implementing these hatchery-based solutions at the parent stock level, Hy-Line aims to simplify early chick management for customers such as Srinivasa Farms by providing breeding stock that does not require on-farm beak trimming and early vaccination. The system is also designed to improve bird welfare by reducing handling stress during the critical early stages of life.

Infrared beak treatment leaves no open wounds, significantly lowering the risk of infection, disease, and mortality associated with bird-to-bird aggression. Meanwhile, the automated injection system ensures accurate and uniform delivery of early-life treatments, contributing to improved chick quality and consistency.

Conducting these procedures at the hatchery also strengthens overall biosecurity by eliminating routine on-farm trimming and reducing the movement of personnel and equipment between farms.

"This investment reflects our focus on supporting our customers with practical, science-based hatchery solutions," said Jonathan Cade, President of Hy-Line International. "By working closely with our customer, Srinivasa Farms and supplier Nova-Tech Engineering, we are pushing forward with proven initiatives that will strengthen the supply of high-quality day-old parent breeding chicks".





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