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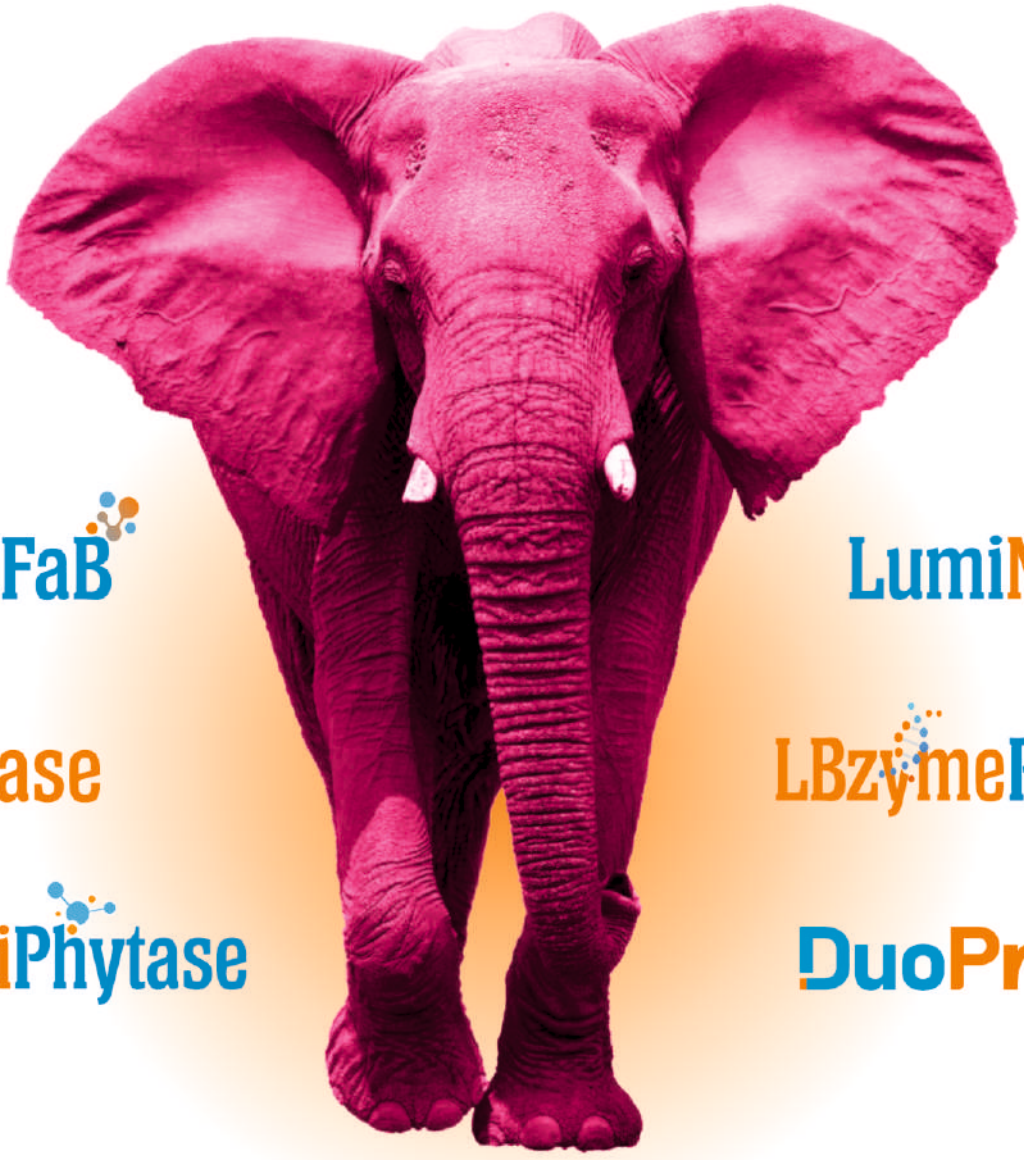

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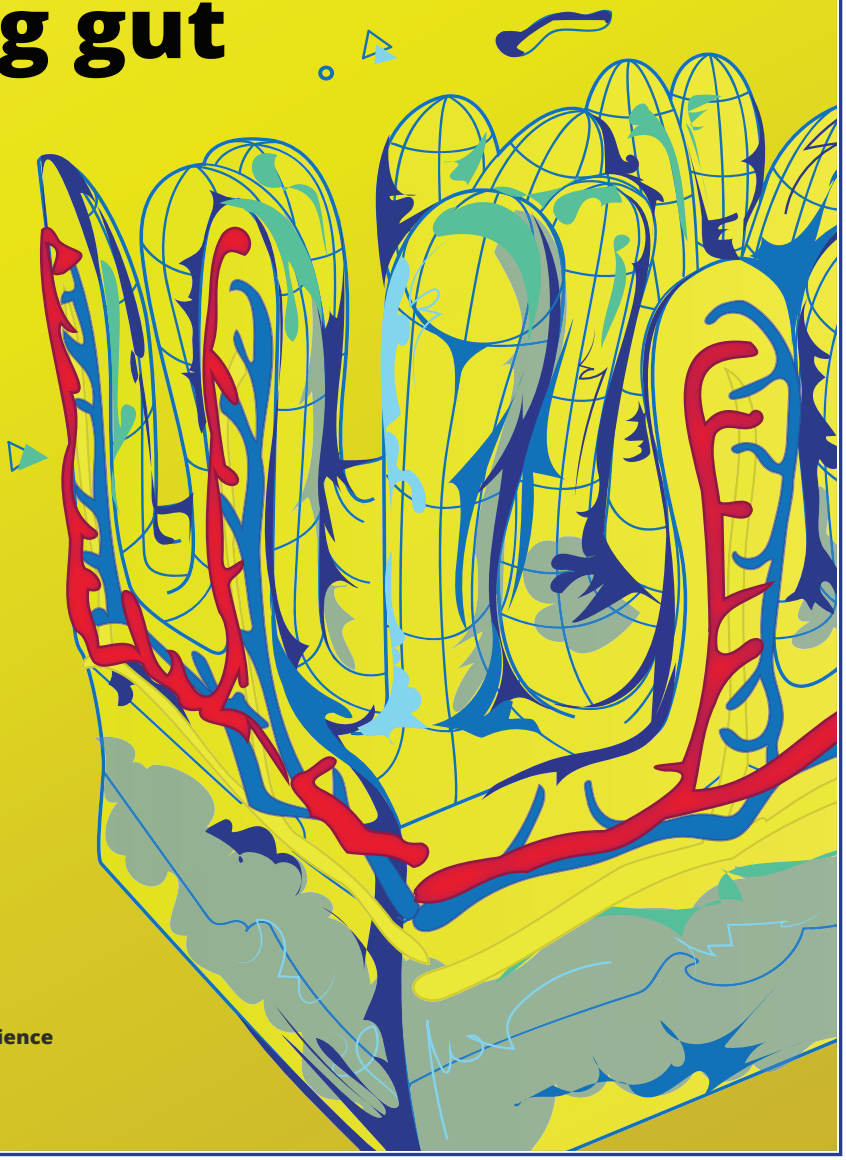

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IN-POU-0016-2025 Dec-27

VOL-26 ISSUE-03 MARCH - 2026

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Printed, Published and Owned by B. Kalyan Kumar, Printed at Karshak Art Printers, 40, A.P.H.B. Blocks, Vidyanagar, Hyderabad - 500 044. India.
Published at 2-1-444/16, 1st Floor, O.U.Road, Nallakunta,Hyd-44. Editor: B. Shiv Shankar.

INDEX OF ADVERTISEMENTS

IRAN- AMERICA - WAR IMPACT!

The world and needs to breeze for severe disruption in peace for the world. Oil, logistics and business are going to be deeply impacted to new laws.

The Indian speech delivered by Sri Narendra Modi

At the KNESSET – Israeli Parliament is unique and praiseworthy. INDIA showcased its 2000 yearlong support for Israel's, which has been the Hindu culture of respecting other so-called minorities.

A point worth noting is the praise by the Israeli opposition leader of the speech by Sri Modi and INDIA about the relationship. She made it clear that despite being the opposition leader, she supports her Prime Minister and INDIA relationship because it is the best thing to happen to her own country.

The stark contrast in Indian democracy is when the opposition in India behaves far worse than the external enemy. Indian opposition has Stooped to new low of shamelessness, and it is high time that the Indian citizens recognizing this immediately. Disillusioned by consistent loss of power and recognition the opposition leader has been falsely implicating and shaming his own country more so in several countries abroad, this must stop immediately this standard amount to abuse of freedom of speech in a most harmful way. Under the grab of freedom by the opposition fine lines are being crossed to be easily classified as more like Anty nationals. The people need to call the facts out.

The monopoly status of one of the large exhibitors is fast disseminating. The grand West Bengal show last month attracted high-quality large number of people from rural areas who were from among common man, students, farmers, and government authorities. This is the true propagation of spreading knowledge and awareness of Chicken and Egg industry. The food was in abundance and free for all visitors, which is a great convenience to the visitors and highly appreciated.

In contrast, the existing leading Hyderabad exhibitor ends up in also encashing the food stalls with exorbitant rates.

The enormous amounts collected for the stalls do not meet with even the basic services expected. Recently people have started to question the abuse of some office bearers of luxurious use of hotels and travel expenses of both domestic and international. The personal promotion seems to supercede the value to the organization. There are reports also of financial frauds, which are being covered up without proper investigation. It is very important that the public body and a nonprofit organization, proper ownership, and accountability towards the duties without focusing on their personal interest and are more so investigated for financial inconsistencies. Some of the office bearers positions are being created without consensus of the members only for vested interest. These should be investigated, checked and avoided.

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Bhuvana Nutribio Sciences India & Andres Pintaluba S.A. (APSA) Spain, Successfully

Hosts 4th Technical Seminar under Bhuvana – Pintaluba Tech Series in Guwahati, Assam.

Guwahati, Assam | 28th January 2026

Bhuvana Nutribio Sciences India & Andres Pintaluba S.A. (APSA) Spain successfully organised its 4th Technical Seminar under the Bhuvana – Pintaluba Tech Series on 28th January 2026 at Rohika International Guest House (AAU-IGH), Guwahati, Assam, in collaboration with PDRC, Director of Research, AVFU. The event marked an important milestone in Bhuvana's and Pintaluba's ongoing efforts to promote science-led, practical solutions for the poultry industry.

The seminar was anchored by Dr. Nikhil Adagale, GM, Bhuvana NBS, and formally began with a welcome address by Dr. Manoj Kumar Dev Sarma, Director Bhuvana, who emphasised the company's commitment to advancing poultry health through innovation and technical excellence. He also highlighted the importance of the Northeast in poultry production and encouraged the Vikasit Bharat mantra and self-sufficiency in this sector very soon. Dr. Prabodh Borah, Directorate of Research AVFU, addressed the gathering and highlighted the university's involvement in poultry development in this region and the scope of this sector for economic development. Dr. Hiranya Kumar Bhattacharya, Director of the Extension Education, AVFU, also attended the session.

The keynote session was delivered by Dr. Abhijit Mishra. His presentation on "Integrated Approach to Gut and Respiratory Health in Poultry" offered valuable scientific insights and practical strategies to improve flock performance and overall farm profitability. The presentation was very informative on ground realities and widely appreciated by participants.

Following the keynote address, Dr. Jyoti Kumar Mainali, Area Manager-Asia of Andres Pintaluba S.A. (APSA), presented an overview of the company's corporate profile and highlighted its European-origin Tiamulin 10% (APSAMIX TIAMULIN 10%), along with other research-driven products like APSAVIT OVOSMART, APSA MIOCHEM, APSA AMINOVIT developed through strong R&D capabilities.

Further, Dr. Santosh Ire, Director, Bhuvana NBS, shared insights into Bhuvana's journey, outlining the organization's core strengths in gut health management and showcasing innovative tablet-based solutions designed to address key poultry health challenges. (GutPROP). He also emphasised the new antiviral solution for coated viruses like IB, ND, AI (ViroStat AML) along with the technically leading Halquionol brand. (BhuQuinol 60% & 12%). Bhuvana's partner principles companies' summer solutions are unique and were shared with the audience. (Patented Chromiate C & Rosh C+).

The seminar witnessed participation from key poultry stakeholders and protein producers from the Northeastern region. The interactive session was well received, with attendees appreciating the depth of technical knowledge, practical relevance, and industry-focused discussions. Key protein producers who attended include Dr. Pankaj Deka, Dr. Mihir Sarma, Mr. Atul Ghose, Mr. Saju Ahmed, Mr. Dimbeswar Thakuria, Mr. Dinesh Deshmukh, Mr. Sushank Bora, Mr. Prasanta Dey, Mr. Dr. Manash Das, Dr. Lakhi Saikia, Dr. Sahjaman Ali, Dr. Sanjib Khargharia, Dr. Manoj Kumar Bora, Dr. Ranjan Neog, Mr. R. K. Jha, and others.

The event served as a strong branding and engagement platform for Bhuvana Nutribio Sciences, India, and Andres Pintaluba S.A., Spain, while also opening up new business opportunities across Assam and neighbouring states. Bhuvana and Pintaluba expressed sincere gratitude to all participating protein producers for their active involvement and encouragement toward its mission of delivering science-backed poultry solutions. Bhuvana Nutribio Sciences acknowledges the efforts put in by Dr. Pankaj Deka and Dr. Mihir Sarma in making this event successful.

The interactive session concluded with a Vote of Thanks by Mr. Khanindra Nath Sarma, Business Manager, Bhuvana NBS North East, Bhutan & Myanmar.


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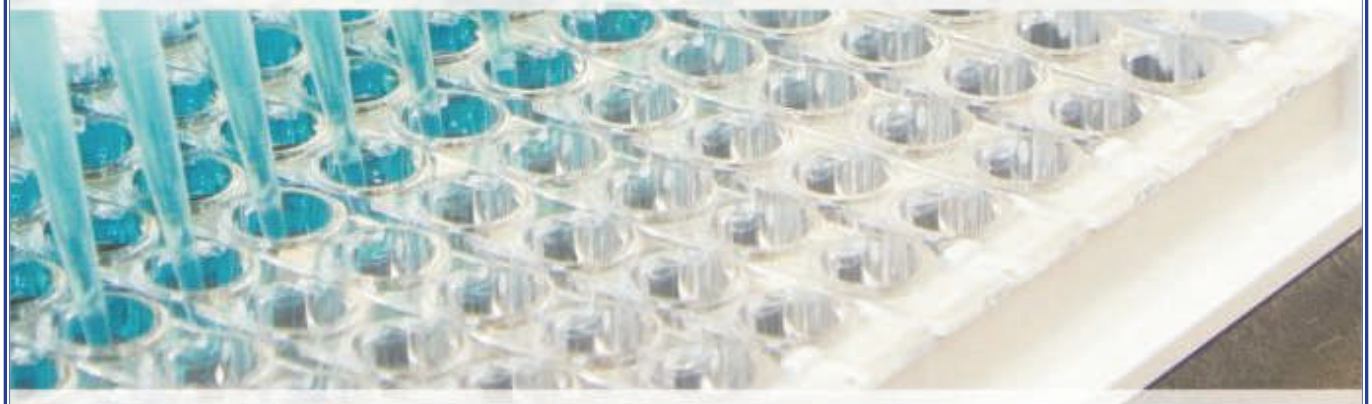

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THE SHOCKING TRUTH ABOUT INDIA'S SILENT PROTEIN CRISIS

Protein deficiency doesn't just harm individuals - it quietly drains corporate India. In a knowledge - driven economy where productivity depends on mental agility, nutrition is no trivial issue.

The Hidden Hunger in India's Metros

India's big cities - Bengaluru, Mumbai, Delhi, Hyderabad, Pune - appear prosperous from the outside. Cafés are crowded, restaurants packed, and food-delivery apps buzzing with orders. Yet behind this abundance lies a lesser-known crisis: millions of urban Indians are eating more than ever, but not eating right.

Unlike hunger, protein deficiency is invisible. It doesn't show up as an empty plate, but as low energy, weak immunity, irritability, poor concentration, and early fatigue. It's the kind of malnutrition that hides behind crisp formal wear, high-performing job titles, and corner offices.

Doctors say it's becoming increasingly common among working professionals who eat frequently but without nutritional intention - skipping breakfast for a latte, grabbing quick carbs between meetings, and ending the day with heavy, comforting, low-protein meals. The result: a full stomach but a protein-starved body.

The Carbohydrate Trap

The average Indian consumes just about 47 grams of protein a day, far below recommended levels. In cities, where convenience dictates food choices, the intake is even lower.

> A large percentage of Indians are protein deficient. Many follow a predominantly vegetarian diet, and even those who are non-vegetarian do not consume protein-rich foods regularly.
>
> **Mrs. Medha**
> ***Patwardhan, senior Dietician.***

Urban diets lean heavily on refined carbohydrates - rolls, noodles, rice, pav bhaji, pizzas, fried snacks, sugary beverages. Protein-rich foods, whether animal or plant-based, get sidelined. For many professionals, caffeine & sugar have become quick substitutes for real energy.

The impact shows: afternoon fatigue, frequent cravings, sluggish focus - often mistaken for burnout, but rooted in biochemical imbalance.

The Economic Cost of Poor Nutrition

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 Indian corporate world talks a lot about mental wellness but rarely about nutritional wellness," says Ravi Natarajan, a Bengaluru-based HR head. "You can't expect high performance from a body running on caffeine and carbohydrates.

A National Mission: Hello Protein

At the forefront of addressing this crisis is Mr. O.P. Singh, 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 recognize protein as a undamental driver of health, productivity, and economic resilience.

To bring this vision alive, Mr. Singh is spearheading a countrywide initiative called "Hello Protein". The movement aims to spark conversations, debunk myths, and encourage Indians to consciously incorporate more protein into daily diets.

The initiative 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 catalyze lasting behavioral 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.

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 sufficiency, it strengthens not just its people - but its prosperity."**

Expanding on his philosophy, Mr. Singh argues 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.

Dr. Avinash Bhondwe, General Physician and Past President of the Indian Medical Association, explains: "In India, a vast majority of people suffer from protein deficiency. Our daily meals are heavily dominated by carbohydrates and fats - rotis, chapatis, rice, and other staples often prepared with generous amounts of ghee and oil. What's missing from the plate is adequate protein, which is the fundamental building block for growth, repair, and strong immunity. Without sufficient protein, the body's ability to fight infections weakens, making Indians far more susceptible to illnesses. Addressing this nutritional gap is critical if we want to build a healthier, more resilient population."

Why Protein Matters

Protein is not a fitness fad - it is the 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.

Every line of code, every boardroom presentation, every business negotiation - all require a body fueled by adequate protein. When protein falls short, energy dips, clarity blurs, and long-term health deteriorate.

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.

Yet myths persist. Many avoid eggs fearing cholesterol; others label chicken "unhealthy." Nutritionists call these fears outdated.

Moderate egg and chicken consumption is perfectly safe, says Dr. Pooja Menon, a Delhi-based dietician. They remain among the cleanest and most complete protein sources.

For vegetarians, paneer, lentils, soya, and millets offer strong alternatives - though animal proteins remain the most complete sources.

Dietician Mrs. Patwardhan adds that traditional Indian diets already offer abundant natural protein - if only we return to them. Eggs are accessible and affordable. Milk, curd, buttermilk, paneer, and cheese are excellent protein sources. Even adding milk powder to recipes can significantly boost protein content. Fermented dairy like curd acts as a natural probiotic, supporting gut health, digestion, and immunity.

India's Poultry Ecosystem: A Backbone of Nutrition

Behind every egg and chicken dish is an ecosystem connecting producers, processors, and consumers.

Producers - 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.

The Indian poultry sector is one of the most well-organized and efficiently managed segments of our food industry.

Dr. Mahesh Shivankar,
Vice President,
Japfa India.

Valued at over ₹2 lakh crore, the sector 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 population.

The Way Forward: Building a Stronger, Sharper India

Government nutrition programs like Mid-Day Meals and Anganwadi centers have improved protein intake among children. But working adults — the backbone of the economy — remain outside most nutrition policies.

Here, corporate India has a crucial role to play.

Company cafeterias can serve balanced, protein-rich meals. HR teams can organize nutrition-literacy sessions. Food-delivery platforms can highlight healthier, protein-forward options. Wellness programs can move beyond gym memberships to include dietary education.

A healthier workforce isn't merely a welfare goal - it is a business advantage.

Protein is not a luxury; it is the fuel of human potential. India's hidden hunger may not show on the streets, but it reveals itself in its fatigue, its reduced productivity, and its rising lifestyle disorders.

The solution is simple and affordable. It begins on the plate - perhaps with something as small as an egg, as familiar as a bowl of dal, or as comforting as a cup of curd.

In a fast-paced urban world, **protein is strength - and a well-nourished India is a stronger, sharper, and more productive India.**

If this mission resonates with you, do drop your ideas/comments/suggestions at :
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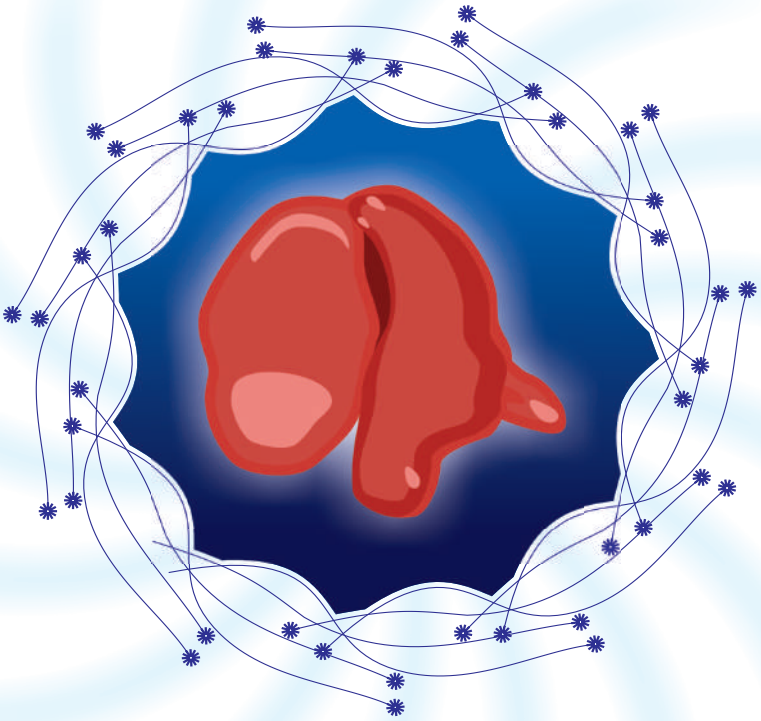

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GLOCREST Cup 2026
Unites the Poultry Industry in Mysore

GLOCREST Pharmaceutical Pvt. Ltd. successfully hosted the GLOCREST Cup 2026 on 24th and 25th January 2026 in Mysore, bringing together key stakeholders from across the Indian poultry industry for two days of competitive sport, collaboration, and camaraderie. The tournament was held in the fond memory of Shri Krishna Setty and Shri Ramesh Babu, Promoters of Krishna Group, whose vision and leadership have left a lasting impact on the industry.

Conceived as more than just a sporting event, the primary objective of the GLOCREST Cup was to create a common platform where professionals across the poultry value chain could connect beyond routine business interactions. The initiative aimed to foster stronger relationships, mutual respect, and long-term collaboration within the industry.

The tournament saw enthusiastic participation from teams representing poultry farmers, integrators, feed manufacturers, veterinarians, and trade partners, reflecting the diversity and scale of the Indian poultry sector. Matches were played in a highly competitive yet disciplined spirit, highlighting values such as teamwork, leadership, and sportsmanship—principles that resonate deeply with the legacy of the leaders in whose memory the tournament was dedicated.

Beyond the cricket field, the event served as an informal networking forum, offering participants valuable opportunities to exchange ideas, share experiences, and strengthen professional bonds in a relaxed and engaging environment. Attendees widely appreciated the initiative as a refreshing and meaningful approach to industry engagement.

The tournament concluded with a formal Award Ceremony on the evening of 25th January 2026, where winning teams and outstanding individual performers were felicitated. The ceremony marked a fitting culmination to the event, celebrating excellence, participation, and collective achievement.

Key takeaways from the GLOCREST Cup 2026 included:

- Strengthening professional relationships across the poultry industry Encouraging collaboration and industry unity
- Promoting teamwork, leadership, and healthy competition
- Creating a positive and engaging platform for industry interaction

Through initiatives such as the GLOCREST Cup 2026, GLOCREST Pharmaceutical Pvt. Ltd. reaffirmed its commitment to building a connected, progressive, and sustainable poultry industry in India, while honouring the enduring legacy of Shri Krishna Setty and Shri Ramesh Babu. The event was widely appreciated by participants and stands as a compelling example of how sport can bridge professional boundaries and inspire collective growth.


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RUNNERS




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IPPE 2026 Setting New Milestones for the Global Poultry, Meat & Animal Food Industry

– Ricky Thaper (www.rickythaper.com)

International Production & Processing Expo (IPPE) 2026, a collaborative effort of the International Poultry Expo, International Feed Expo and International Meat Expo, was successfully organized by the U.S. Poultry & Egg Association, American Feed Industry Association (AFIA) and North American Meat Institute at the Georgia World Congress Center, Atlanta, USA, from January 27–29, 2026. Another remarkable edition, IPPE 2026 attracted attendees from more than 130 countries, reaffirming its position as the world's largest annual poultry & egg, meat and animal food industry event. The expo featured more than 1,380 exhibitors across 6,65,000 square feet of exhibit space, showcasing the latest technological advancements, services and products focused on poultry, meat and animal food production.

International participation remained strong, with significant representation from North America, Latin America, Europe, the Middle East, Africa, South Asia and Southeast Asia, enabling meaningful business interactions and cross-border collaborations. More than 80 educational sessions were conducted during the expo, covering critical themes such as poultry health management, biosecurity, sustainability, artificial intelligence, plant efficiency, market intelligence and industry innovation. Key knowledge platforms included the International Poultry Scientific Forum, Tech Talks, and industry-focused summits, offering practical insights, research-driven solutions

and future-ready strategies for poultry and animal food professionals.

The exhibition showcased cutting-edge advancements in poultry processing equipment, automation and robotics, animal health products, nutrition solutions, feed ingredients and sustainable production technologies. IPPE 2026 once again proved to be the premier global platform for unveiling next-generation innovations shaping the future of animal agriculture, while also facilitating meaningful interactions among poultry industry leaders from around the world.

This year Indian Pharmaceutical and Equipment Companies Strengthen Global Presence at IPPE 2026, reflecting India's growing influence in the global poultry, feed, equipment and animal health industries. By showcasing innovation, sustainability and cost-effective solutions on one of the world's most prestigious international platforms, these companies strengthened their global footprint and enhanced Indian brand visibility on the world stage.

The U.S. Soybean Export Council (USSEC) played a key role at IPPE 2026, showcasing the importance of U.S. Soy in advancing global animal nutrition and sustainable feed solutions. At the USSEC booth, board members and senior management engaged with visitors, sharing insights on industry trends, modern feed formulations and success stories across poultry, dairy and aquaculture sectors. The Soy Excellence Center (SEC) was also highlighted for its role in building technical expertise and strengthening the global soy value chain.

The industry now looks forward to the next edition of IPPE, scheduled to be held at the Georgia World Congress Center, Atlanta, USA, from January 26–28, 2027, promising even greater opportunities for advancement across the poultry, meat and animal food sectors.


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ETW Energietechnik wins contract for biomethane plant from Berliner Stadtreinigung (BSR)

Processing up to 700 Nm3/h landfill gas into biomethane

Berliner Stadtreinigungsbetriebe (BSR) is relying on technology from the Rhineland and is delighted to be taking a decisive step towards environmental protection and climate neut¬rality with the biomethane plant from ETW Energietechnik GmbHz in Moers. The full-service provider of biomethane plants and combined heat and power (CHP) plants has been awar¬ded the contract for a plant that will process up to 700 Nm³/h of landfill gas into biomethane in the future.

The plant concept was developed and planned by BSR in close cooperation with the plan¬ning office Rytec GmbH. Rytec brings extensive expertise in biogas production, biological and thermal waste treatment, energy technology and waste and landfill technology tot he project.

ETW process converts landfill gas into biomethane

„With the ETW treatment process specially developed for landfill gas with a downstream nitrogen reduction unit (NRU), landfill gas with nitrogen contents of over 22 per cent can be converted into biomethane suitable for feed-in. Following the consistently positive operating experience of our first reference plant in Taranto, Italy, which has been running successfully for over a year, this new contract confirms the market‘s confidence in our engineering exper¬tise and plant technology,“ explains Alexander Szabo, Sales Manager at ETW Energietech¬nik.

Fluctuations in gas composition and quantity

Landfill gas is a special gas for processing. On the one hand, it has a very high concent¬ration of trace pollutants (VOCs: volatile organic compounds) and siloxanes. On the other hand, the gas quality is not constant. This results in fluctuations in gas composition and gas volume. The longer a landfill site is in operation, the more methane is replaced by oxygen and nitrogen. In addition, the volume of gas is declining.

High demands on gas processing

This places very high demands on a biomethane plant for gas processing. The methane concentration is between 35 and 60 percent, the nitrogen and oxygen concentration is up to 23 percent, and the operating range – i.e. the partial load capacity of the plant – is between 40 and 100 percent capacity.

Additional CHP unit covers own electricity requirements

In order to minimise the external electricity requirements of the biomethane plant, ETW is also supplying a CHP unit for its own electricity supply, which is also operated with the off-gas from the processing plant. This increases the methane yield of the entire plant to over 95 percent.

ETW Energietechnik GmbH
Ferdinand-Zeppelin-Straße 19
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Contact: Alexander Szabo
Head of Sales
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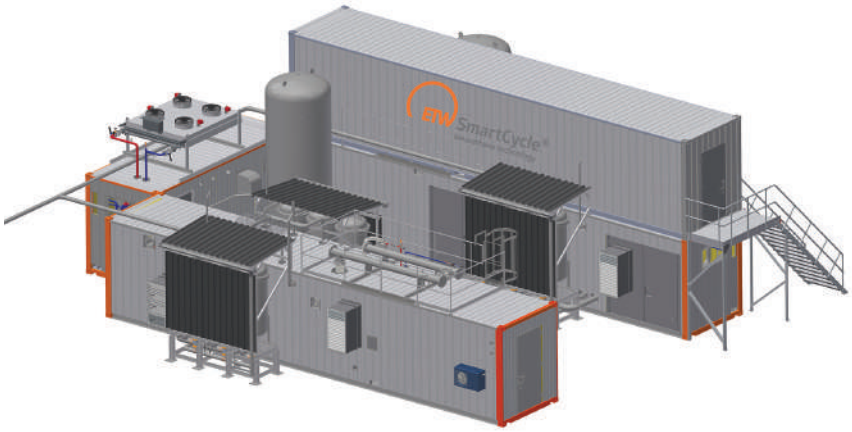

With the ETW treatment process specially developed for landfill gas with a downstream nitrogen reduction unit (NRU), landfill gas with nitrogen contents of over 22 per cent can be converted into biomethane suitable for feed-in.

Company profile

ETW Energietechnik GmbH has been developing and producing energy systems at its Moers site since 1997. Since its foundation, ETW has been a manufacturer of highly flexible gas-fired power plants.

In its core business, the company focuses on the construction and servicing of biomethane plants for upgrading biogas to natural gas using the ETW SmartCycle® PSA process in the performance range > 500 Nm³/h raw gas and upgrading to liquid CO2 using the ETW SmartCool® CO2 liquefaction system.

Other main products are combined heat and power plants (CHP) in the output range from 400 to 4,500 kilowatts, electric.

The company acts as a full-service provider. From the transfer of biogas to the feeding of electricity or gas into the grid and the provision of heat, ETW also takes care of the construction, commissioning and servicing of the plant technology.

ETW Energietechnik GmbH‘s customers include large energy suppliers, agricultural businesses, local authorities and industrial companies of all shapes and sizes, all of which attach great importance to environmentally friendly and economical energy generation.

A strategic focus is the realisation of economical and sustainable system concepts, which are individually planned and tailored to the respective requirements. A qualified service team ensures the operational safety and maximum availability of the systems.

The family-run, medium-sized company, which employs 160 people, is managed by Marco and Carsten Weiss.

Please send us a specimen copy in case of publication

Contact: Jennifer von Müller

Marketing and sales assistance

mobile: +49.1727475082

E-Mail: vonmueller@etw-energie.de

ETW Energietechnik GmbH
Ferdinand-Zeppelin-Straße 19
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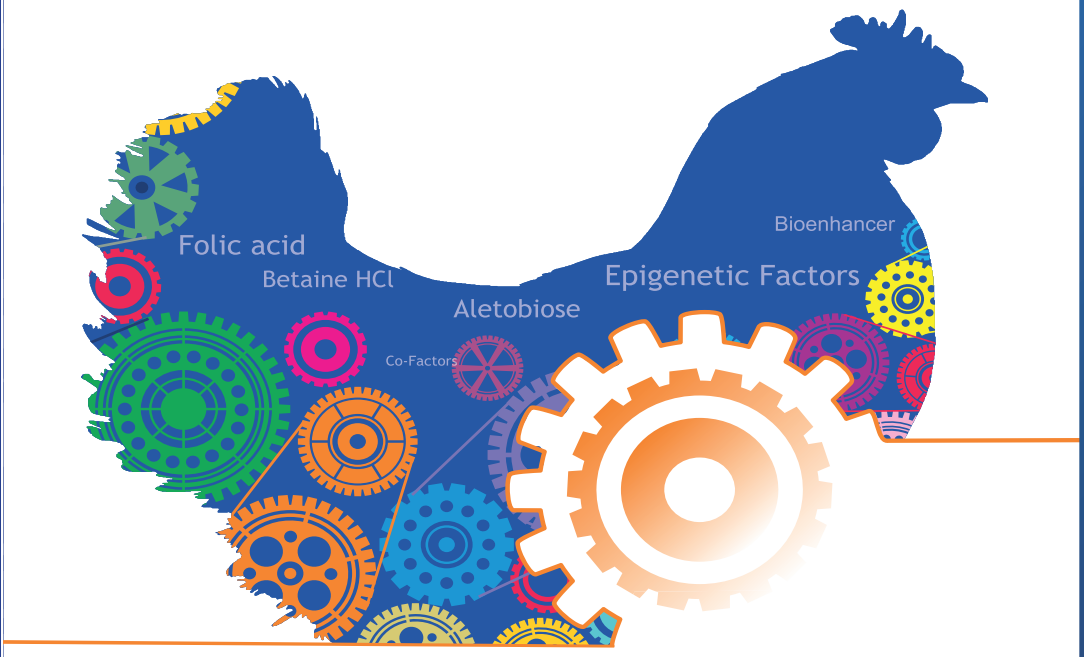

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EW Nutrition and GRASP Strengthen Strategic Partnership

Visbek and Curitiba, 3rd February 2026 – EW Nutrition and GRASP are pleased to announce a significant strengthening of their collaboration through a new agreement that will see EW Nutrition increase its ownership stake in GRASP from its current position to full ownership over the next four years.

This strategic move reflects both companies' commitment to long-term growth and their shared vision for expanding EW Nutrition's market-leading position in the industry. The phased transition will ensure business continuity while supporting GRASP's ongoing operations and development initiatives in Brazil.

"This agreement represents a natural evolution of our successful partnership," said Jan Vanbrabant, CEO of EW Nutrition. "We are excited to deepen our investment in GRASP and its exceptional team, products, and operations in Brazil."

GRASP's portfolio includes world-leading products for toxin mitigation (Mastersorb), gut health management (Activo) and other industry-recognized solutions. The company's dedicated team will remain focused on delivering the quality and innovation that have established GRASP as a trusted name in the market.

"We look forward to this next chapter in our partnership with EW Nutrition," said Alysson Hoffmann Pegoraro, GRASP Managing Director. "I am confident that this agreement will help to not only continue producing and delivering innovative solutions for our customers worldwide but further increase significantly the global footprint of GRASP."

The gradual transition to full ownership will be completed bythe end of 2029, ensuring a smooth integration process that preserves GRASP's operational strengths and further solidifies EW Nutrition's market position.

About EW Nutrition

EW Nutrition is an animal nutrition company that offers integrators, feed producers, and self-mixing farmers comprehensive animal nutrition solutions for gut health management, feed quality, digestibility, and more. With production facilities, offices, and development centers on 6 continents, EW Nutrition researches, manufactures, markets, and services its products and programs to support customers wherever they are.

About GRASP

GRASP was founded in 2001 to provide the animal nutrition and health market with cutting-edge technological, natural, and functional products. Investment in industrial processes, manufacturing expansion, obtaining international certification (GMP+) and development and production units in Curitiba and in São Paulo ensure seamless quality and service for customers in around the world. Since 2011, it has been majority owned by EW Nutrition.

Media Contact

marketing@ew-nutrition.com

12th Kolkata International Poultry Fair (KIPF) 2026

Kolkata, February 2026: The 12th Kolkata International Poultry Fair (KIPF) 2026, held from 11th to 13th February 2026 at the Biswa Bangla Exhibition Centre, along with the International Seminar NOVACON 2026 on 10th February at the Biswa Bangla Convention Centre, concluded on a highly successful note with record participation from across the poultry value chain. The grand inauguration of the fair on 10.02.2026 was graced by Sri Swapan Debnath, Hon'ble Minister-in-Charge, Animal Resources Development Department, Government of West Bengal, along with other eminent dignitaries, senior bureaucrats, industry leaders, scientists, and representatives from national and state poultry bodies. The event reaffirmed the growing importance of the poultry sector in ensuring nutritional security, rural employment, and economic growth.

NOVACON 2026 recorded a total attendance of 1,150 delegates, reflecting strong engagement from veterinarians, researchers, policymakers, and industry experts. The three-day trade fair witnessed an impressive turnout, with 8,547 visitors on 11.02.2026, 6,372 on 12.02.2026, and 3,294 on 13.02.2026. The Knowledge Zone attracted 1,200 students from several colleges over two days, offering them exposure to modern poultry technologies, industry interaction, and career opportunities. The second-day Technical Seminar saw participation from 400 delegates.

A major highlight of 12.02.2026 was the meeting of the Eastern India Poultry Development Forum, which brought together Presidents, Secretaries, and members of federations and associations from Bihar, Jharkhand, Odisha, Sikkim, Assam, Arunachal Pradesh, Mizoram, Nagaland, Manipur, Tripura, Meghalaya, and West Bengal. The meeting focused on coordinated market information sharing, price stabilization mechanisms, inter-state supply balance, and strategies to increase egg and chicken consumption across Eastern and North-Eastern India, which represent a vast and growing consumer base.

Adding to the excitement on the second day, the National Egg Coordination Committee (NECC) organized an Egg Eating Competition at their stall on 12.02.2026, drawing enthusiastic participation and large public engagement. The event creatively promoted egg consumption while reinforcing awareness about its nutritional benefits.

The Pan India Broiler Coordination Committee meeting emphasized the importance of real-time market intelligence sharing and coordinated price guidance to protect farmers from volatility and maintain stable supply chains across states. The contribution of the West Bengal Poultry Federation in rural poultry development—through broiler integration models, buy-back support, farmer training, disease surveillance, vaccination drives, biosecurity measures, vehicle washing stations, and mobile veterinary services—was widely appreciated.

The New Generation Conclave held on 13.02.2026 brought together the next generation of the poultry sector, where over 150 young entrepreneurs and aspiring poultry farmers engaged in meaningful discussions on the future prospects of the industry. The interactive session focused on innovation, technology adoption, sustainable farming practices, market expansion, value addition, and leadership development to strengthen the sector in the coming years. The conclave served as an inspiring platform to encourage

youth participation and ensure continuity and modernization within the poultry industry.

A grand Cultural Dinner held on 12.02.2026 provided an opportunity for delegates from across India to interact and celebrate the unity and diversity of the poultry fraternity. The closing ceremony was graced by Sri Pradip Kumar Mazumdar, Hon'ble Minister-in-Charge, Department of Panchayats & Rural Development, and Sri Biplab Roy Chowdhury, Hon'ble Minister of State with Independent Charge, Fisheries, Aquaculture, Aquatic Resources and Fishing Harbour, Government of West Bengal. Both dignitaries lauded the organizers and underscored the importance of continued coordination, consumption promotion, youth engagement, and farmer protection for the sustainable growth of India's poultry sector.

The 12th Kolkata International Poultry Fair 2026 once again established itself as one of the most significant poultry industry platforms in the region, focusing on demand creation, market stabilization, rural empowerment, and the integration of the next generation into the future of poultry farming.

The organizers are pleased to announce that the 13th Kolkata International Poultry Fair (KIPF) 2027 will be held from 13th to 15th February 2027 (Exhibition), with NOVACON 2027 scheduled on 12th February 2027. The upcoming edition aims to further expand participation, strengthen industry collaboration, and continue promoting sustainable growth and innovation in the poultry sector.

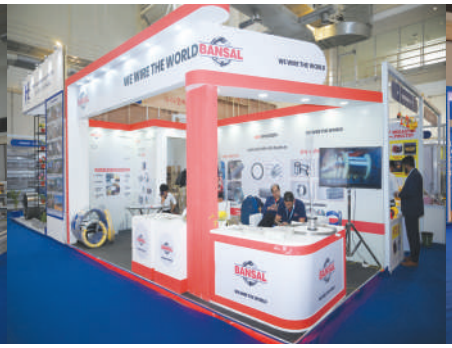
Novocon -2026 Presence at Kolkata International Poultry Fair

Pan India at Kolkata International Poultry Fair

Technical Seminar at Kolkata International Poultry Fair

Next Generation Conclave at Kolkata International Poultry Fair

Participation of Companies at Kolkata International Poultry Fair








Closing Ceremony at Kolkata International Poultry Fair





Breakthrough Research Published in Springer Nature Journal Demonstrates Strong Hepatoprotective Effects of Dozliv Forte-P & Dozliv Forte-P Ultra

Research Led by Carus Laboratories Private Limited in Collaboration with National Institute of Pharmaceutical Education & Research (NIPER) and Guru Jambheshwar University of Science and Technologyvalidatesscientific excellence in veterinary innovation.

Study Overview

Using a well-established carbon tetrachloride (CCl_4)-induced hepatotoxicity model in albino rats, the study evaluated the hepatoprotective and antioxidant efficacy of Dozliv Forte-P and Dozliv Forte-P Ultra through comprehensive biochemical and histopathological assessments.

Key Findings

- Significant Reduction in Liver Injury Markers: Both formulations markedly reduced elevated SGOT and SGPT levels, indicating protection against hepatocellular damage.
- Restoration of Antioxidant Defence Systems: Treatment significantly improved endogenous antioxidants, including glutathione (GSH) and catalase.
- Reduction in Oxidative Stress: Lipid peroxidation (MDA) and nitrite levels were substantially decreased, demonstrating strong cellular protection.
- Histopathological Validation: Liver tissue analysis revealed near-normal hepatic architecture in animals treated with Dozliv Forte-P Ultra.
- Comparable to Silymarin: Dozliv Forte-P Ultra demonstrated efficacy comparable to the gold-standard hepatoprotective agent Silymarin and showed superior outcomes compared to Dozliv Forte-P

Advanced Formulation Delivering Enhanced Outcomes

Dozliv Forte-P Ultra is formulated with a scientifically designed combination of L-carnitine, Betaine HCl, Taurine, Choline chloride, Nicotinamide, Methylcobalamin, Magnesium sulphate, Sorbitol, and Citric acid.

The enhanced formulation—particularly the inclusion of taurine, nicotinamide, methylcobalamin, and citric acid—appears to strengthen antioxidant and anti-inflammatory mechanisms, contributing to improved liver function restoration.

About Carus Laboratories Private Limited

Carus Laboratories Private Limited is a research-driven veterinary pharmaceutical company dedicated to developing innovative, scientifically validated formulations that support animal health, productivity, and performance through strong academic collaborations and evidence-based development.

ROLE OF POLYPHENOLS BEYOND ANTIOXIDANTS IN POULTRY

Dr. Ajay Chalikwar
B. V. Sc. & A. H., MBA (Marketing), National Technical Head,
IRIS Life solutions Pvt. Ltd. Bengaluru.
(Author: Dr. Rohit Rathod, Dr. Gopal Potdar*, Dr. Hardik Patel)

India is now ranking world's 3rd largest economy supported by swift change in the policies and development in the technology and manufacturing sector. Youth are playing major role in the growth of India. There is remarkable growth in the purchase power parity.

Due to the growing demand for the nutritious food and increased awareness about the health, post COVID era, there is huge demand for the animal protein which are essential for maintenance of immunity and overall health.

Poultry meat, eggs, milk, and fish serve as rich sources of protein, essential amino acids, vitamins, minerals and micronutrients. Animal-sourced protein foods provide crucial nutrients that support the growth and development in children, maintenance of muscle mass and function in in the exercising individuals.

Most animal-sourced protein foods contain all the required essential amino acids in proportions that are suitable for meeting human requirements and are considered as a complete protein. Many plant-derived proteins, on the other hand, contain low amounts of one or more essential amino acids like lysine, leucine and methionine (Sydney Sheffield July 2024).

Poultry meat and eggs are now one of the major sources of protein food worldwide which is the most produced meat globally, accounting for about 40% of total meat production as of 2024. The United States, China, and Brazil are the top three poultry-producing countries, while Asia is the largest region for both production and consumption. India ranks 5th in global meat production and 3rd in egg production. Combined animal protein share of poultry meat and eggs will be around 48% by the year 2031 (Rabobank projections of FAO, USDA and local statistics 2023).

As poultry meat is rich in poly unsaturated fatty acids (PUFA) also called omega 6 fatty acids and monounsaturated fatty acids, called as omega 3 fatty acids which reduces risk of cardiovascular diseases and blood pressure (Dragon Milicevic 2014).

Significant genetic research is underway in broilers and egg type chickens to meet the surging need of poultry meat and eggs.

The research in the broiler is helping to improve growth rate, feed efficiency, increasing breast yield, reducing mean age, improving livability and robustness

and improving welfare indices like reducing leg deformities and metabolic

syndromes like ascites and SDS due to balanced breeding (K. M. Hartcher et. al., 2019).

Generation of free radicals -

Free radicals are formed in poultry primarily as a result of an imbalance between the production of reactive oxygen species (ROS) and the bird's intrinsic antioxidant defense mechanisms, a condition known as oxidative stress (V. Lobo et. al., 2010). This imbalance is driven by several factors, which can be categorized into environmental, nutritional, microbial, and processing-related causes.

Free radical generation in poultry occurs both at the cell membrane and the cellular (intracellular) level, primarily as a result of metabolic and environmental stress (E. Cadenas et. al., 2000). Increased lipid peroxidation, a process in which free radicals snatch electrons from lipids in cell membranes, leading to cell damage

Free radicals are reactive oxygen species (ROS) such as: Superoxide anion (O2-), hydrogen peroxide (H2O2), hydroxyl radical (OH°) and singlet oxygen (1O2) (Kohen R et. al., 2000). These are by-products of normal cellular metabolism, especially during aerobic respiration. Reactive nitrogen species (RNS) are a family of antimicrobial molecules derived from nitric oxide and superoxide. They are produced by immune cells in response to inflammation and can also be formed as byproducts of metabolic processes. They are peroxynitrite (ONOO-), and Nitrogen Dioxide (NO2) (Yermilov V., 1995).

Sites of Free Radical Generation

• At the Cell Membrane Level - Polyunsaturated fatty acids (PUFAs) in the lipid bilayer are highly prone to oxidation, lipid peroxidation occurs when ROS attack these fatty acids which intern damages the phospholipid membrane, affecting permeability and fluidity (Wagner B.A et. al., 1994).

• At the Cellular (Intracellular) Level - Main sites: (Enrik Cadenas 2004).

1. Mitochondria – During oxidative phosphorylation, leakage of electrons leads to superoxide formation.

2. Endoplasmic Reticulum – Protein folding generates ROS.

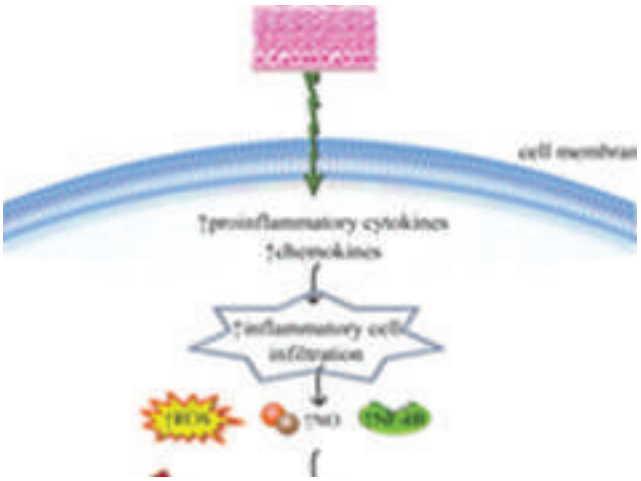
3. Peroxisomes – Fatty acid oxidation forms H□O□.

4. Phagocytic cells (heterophils/ macrophages) – Generate ROS during respiratory burst as part of immune defense.

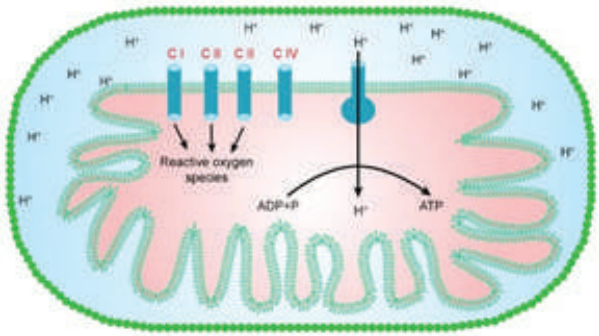
Consequences of Excess ROS generation in the body -

If antioxidant systems (e.g. SOD, catalase, glutathione peroxidase, vitamin E, selenium) are insufficient, ROS leads to damage to the membrane, enzyme inactivation, mutations and apoptosis of the cells and reduce growth, reproduction and immunity (Borut Poljask 2013)

ROS production at cell membranes



ROS production in the mitochondria



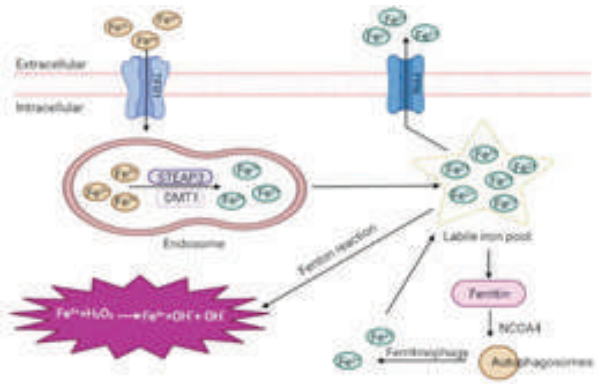
Average somatic cells like epithelial cells have 200 to 1000 mitochondria and in high energy cells like muscle, liver and oocytes there are 1000 to 10000 mitochondria (Dorothy R.

Haskett 2014).

Mechanism of generation of free radicals.

1. Mitochondrial Respiration: due to high metabolic rate and rapid growth in broilers (Safdar and Maghami 2014).

2. Fenton and Haber-Weiss Reactions: Fenton reaction involves ferrous (Fe2+) iron reacting with hydrogen peroxide (H202) and produce hydroxyl radical (OH.). The Haber-Wiess is the cycle where superoxide (O.-) reduces to ferric iron (Fe3+) (Le Zang 2021).



Key contributing factors

Managemental factors like high stocking densities, transportation stress, and poor ventilation (leading to ammonia accumulation) can induce stress and increase free radical production (OE Oke et. al., 2024).

Nutritional Factors

- Oxidized Feed Ingredients: The use of oxidized fats and oils in the diets increase production of ROS in to the animal system (Peng Lu et. al., 2025).
- Mycotoxins and other feed Toxins: Mycotoxins (aflatoxins, ochratoxins, DON, T2, Fumonisin) in feed increase ROS generation and further reduce production of endogenous SOD, CAT, GPx leads to cellular damage and impaired health in the
- affected birds (Checa J J et. al., 2020). Heavy metals like lead, cadmium, arsenic and pesticides and herbicides increase production of ROS leading to oxidative stress (Rohollah Ebrahimi 2023).
- Mineral Imbalance: High dietary Fe+ and Cu+ can accelerate the formation of free radicals via the Fenton reaction, while deficiencies in Se, Zn, and Mn can impair the bird's ability to neutralize them (Kai Qiu 2023).

Biological and Pathological Factors

- Immune Response: The bird's immune cells (macrophages and neutrophils)

produce ROS in an "oxidative burst" as a defense mechanism to kill invading

pathogens (Haiqi He 2003).

- Genetic Predisposition: Modern birds have a higher metabolic output and are inherently more susceptible to oxidative stress due to limited thermotolerance and a less robust antioxidant system (Li Zhang 2021).

Genetic selection and its impact on antioxidant system-

Consequences in Broiler Breeders- Broiler breeders are genetically similar to fast-growing broilers but are feed-restricted to control body weight and reproduction and this combination of high metabolic potential and nutrient restriction worsens oxidative imbalance (M T Lee 2018).

Key impacts include:

- Reduced reproductive efficiency: Oxidative damage in ovarian and sperm cells.
- Mitochondrial dysfunction: Reduced ATP output, premature cellular aging.
- Altered redox signaling: Impaired metabolic and hormonal regulation (e.g., insulin, thyroid).

- Muscle and vascular damage: Myopathies and reduced tissue integrity.

Consequences in the broilers -Modern broilers grow 3–4 times faster and reach

market weight with 30–40% less feed compared to birds from the 1950s.

However, this comes with metabolic and oxidative trade-offs.

(Selina Acheampong 2024). oxidative stress negatively impacts various meat quality attributes overproduction of free radicals from stress damages muscle tissues, leading to detrimental changes in appearance, texture, and flavour (Li Zhang et. al., 2021).

Genetic selection for rapid growth in broilers has dramatically increased meat yield but has also negatively impacted meat quality, leading to issues like pale, soft, and exudative (PSE) or dark, firm, and dry (DFD) meat, white striping, and wooden breast (Petracci M 2004, Zhang L 2005).

Physiological and Health Consequences due to genetic selection in broilers

Genetic trait	Impact of genetic selection	Effect on cellular oxidation
Growth rate	↑↑	↑ ROS generation
Feed efficiency	↑	↓ Antioxidant reserves
Muscle fiber type	More glycolytic	↓ Mitochondrial defense
Heat sensitivity	↑	↑ Lipid peroxidation
Immune function	↓	↑ Oxidative damage
Antioxidant enzyme activity	↓	↑ Cellular damage

Consequences in the commercial layers- The impact of genetic selection in commercial layers on the production of reactive oxygen species (ROS) can be explained as a cascade of physiological and cellular changes that accompany the drive for higher productivity (Peter F Surai 2019).

The modern leghorns are producing around 500 eggs in 100 weeks (M. M. Bain et. al., 2016) and the efforts are made through improving laying persistency, egg quality, feed efficiency, livability and controlling behavioral traits like feather pecking (Lohman June 2017). This selection increases metabolic activity and oxygen consumption in the liver and ovary (Agri and biological sciences 2024).

Oxidative stress due to viral challenges-

Viral diseases in poultry significantly increase oxidative stress in cells by both enhancing the production of reactive oxygen species (ROS) and reactive nitrogen species (RNS) and simultaneously compromising the bird's natural antioxidant defense systems. This imbalance leads to widespread cellular damage, contributes significantly to the disease's pathogenesis and impact on poultry health and productivity (Zaib Ur Rahman et. al., 2018).

Several avian viral diseases have been linked to increased oxidative stress, including Newcastle disease virus (NDV) (Meng C et. al., 2018), Avian Influenza virus (AIV) (Ye S. et. al., 2015), Infectious Bronchitis (IB) (Cao Z et. al., 2012), Infectious bursal disease virus (IBDV) (Rehman Z U et. al., 2016), Avian Reovirus (ARV) (Klucking S. et. al., 2005), Marek's disease virus (MDV) (Hao Y et. al., 1997).

Mechanisms of Increased Oxidative Stress in viral challenges -

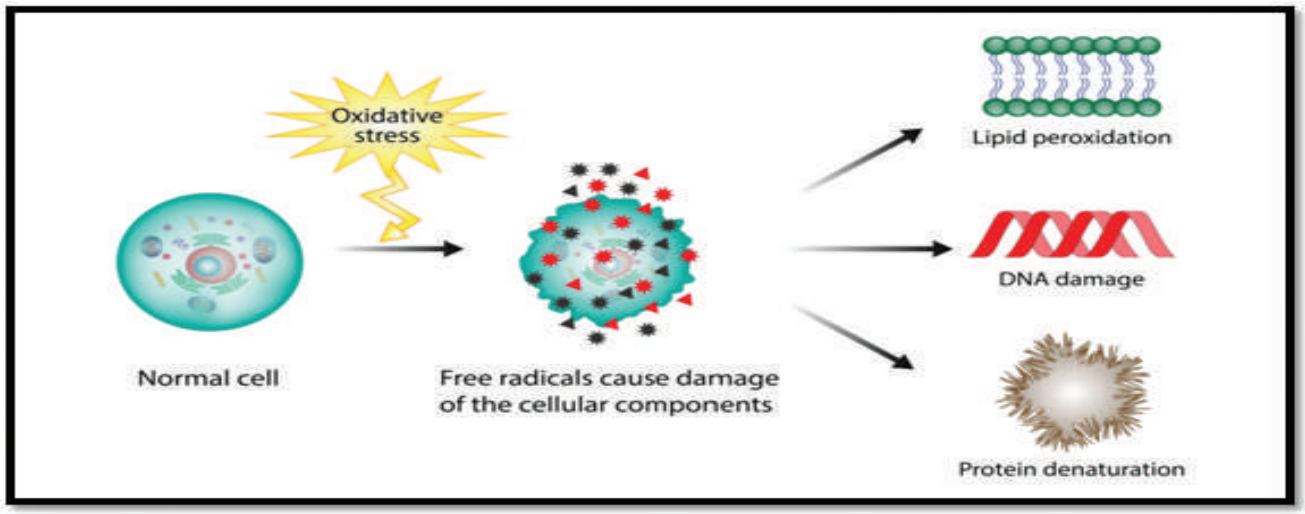
- Immune Response (Oxidative Burst): Macrophages and neutrophils initiate an

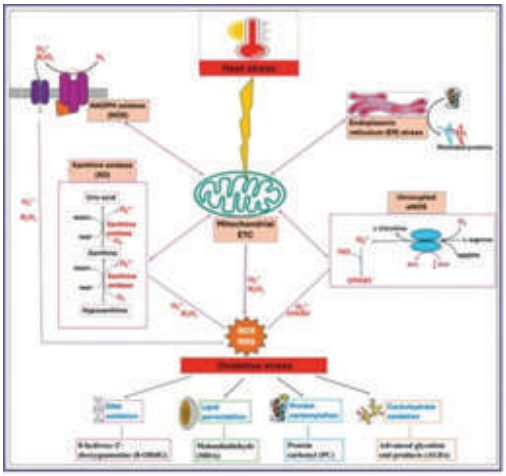
oxidative burst and the overproduction of ROS can overwhelm the antioxidant system (Fang FC dt. Al., 2011).

- Mitochondrial Dysfunction: Viral components disrupt normal mitochondrial function and cause leakage of electrons resulting in excessive superoxide production within the cell (Reshi M L et. al., 2011).
- Activation of Cellular Pathways: The NF-κB and MAPK pathways produces large amounts of nitric oxide (NO) further contributing to oxidative and nitrative stress (Paiva C N et. al., 2014).
- Suppression of Antioxidant Systems: Viruses can actively suppress or decrease the activity and levels of superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) and non-enzymatic glutathione (GSH), vitamin E and vitamin C antioxidants (Meng Chun Chun et. al., 2018).

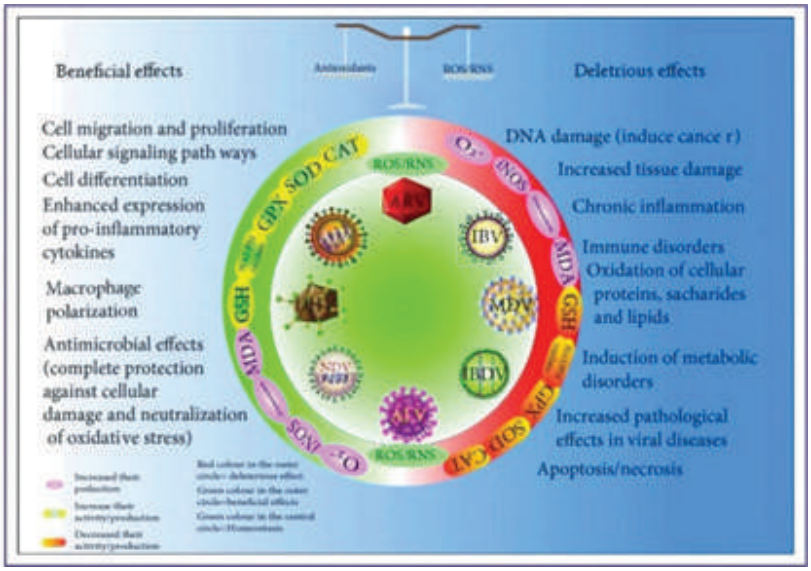
Consequences of Oxidative Stress are

- Lipid peroxidation,
- Protein damage,
- Membrane damage
- DNA damage and
- Immunosuppression (Domingo E 1997)





Bikas Aryal et. al., April 2025



Heat stress increases Oxidative Stress by following mechanisms.

1. Electron leakage leads to mitochondrial Dysfunction and Increased ROS Production (White, M.G et. al., 2012).
2. Reduced Blood Flow (Ischemia-Reperfusion) to the peripheral organs and GI tract (D Wolfenson et. al., 1981).
3. Activation of Pro-Oxidant Enzymes, NADPH oxidase (NOX) (Griendling, K.K 2000) and xanthine oxidase (XO)
4. Activation HPA axis increases the levels of circulating corticosterone (E. M. Oluwagbenga et. al., 2023).
5. Prolonged or chronic heat stress depletes vit E, C, A, and Se, Zn, and Mn, weakening the body's defense against ROS (Abdollah Akbarian et. al., 2016).
6. Oxidative stress in the gut cause leaky gut and compromise gut barrier function (A. Hosseindoust et. al., 2022).

Biomarkers of Oxidative Stress in Modern poultry (Donne Estipona 2024)

- ↑ MDA (malondialdehyde) — lipid peroxidation marker
- ↓ GSH (glutathione) — key antioxidant depletion
- ↓ SOD, CAT, GPx activity — reduced enzymatic antioxidant capacity
- ↑ Protein carbonyls — oxidative damage to muscle proteins
- ↑ 8-OHdG — DNA oxidation marker

Economic impact of oxidative stress within cell-

FCR ↑,

ADG ↓

Laying % ↓

Mortality ↑

Carcass dressing ↓

Meat: Fat ratio ↓

Impact of oxidative stress at the cell membrane-

Drip Loss ↑

Shelf-life ↓ (e.g. TBARS fat oxidation ↑),

Preservation of pigmentation ↓

How to control oxidative stress?

Enzymatic antioxidants like glutathione peroxidase (GPX), catalase (CAT), superoxide dismutase (SOD), peroxiredoxins, thioredoxin reductase, etc. are produced in the body. SOD, a first line of antioxidant is involved in the conversion of superoxide into H2O2, which is then neutralized by CAT and GPX to water and molecular oxygen, thereby reducing the levels of harmful ROS (Jeeva et al., 2015).

Supplements to combat oxidative stress in poultry

Vitamin E, C, β carotene, ubiquinol, glutathione, selenium and polyphenols (Therond et. al., 2000).

Vitamin E acts as an antioxidant primarily in cell and organelle membranes due to its lipophilic nature (Saliha Rizvi et. al., 2014) and vitamin C being a water-soluble vitamin, has greatest activity within the cells (Viviana Montecinos et. al., 2007). Selenium acts as intracellular and extra cellular but its activity is dependent on production of incorporation into various selenomproteins (Arthur John R, et. al., 2003).

Polyphenols - are secondary metabolites of plants and exerts positive impact on animal performance. They are the major substances produced by the plants present in grains, fruits, vegetables, herbs and present in fruits, flowers, roots, leaves and seeds and are part of plant defense system against pests and UV radiation (Petty and Scully et. al., 2009).

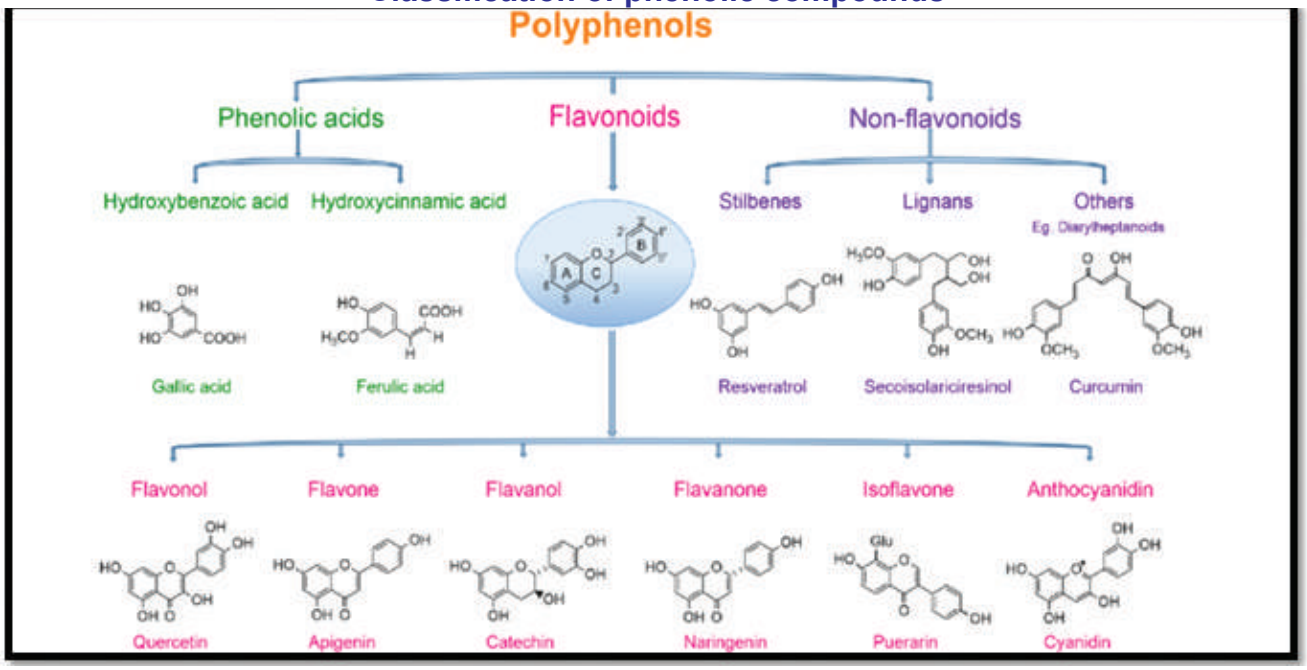
There are around 8000 different molecules are part of polyphenols. They are present in the plants in two forms, aglycons and glycosides and are further divided in to flavonoids and non-flavonoids (Surai 2014).

Classification of polyphenols

Polyphenols show antioxidant, antimicrobial, anti-inflammatory, anti-allergic, antimutagenic, and immunomodulatory properties (Lipiński et. al., 2017). Polyphenols act as natural antioxidants, and are considered to be involved in the protection of polyunsaturated fatty acids (PUFA), proteins, nucleic acids, and carbohydrate moieties from oxidative stress (OS) and damage due to their free radical scavenging and metal (Fe+ and Cu+) chelation properties (Heleno et. al., 2015; Vuolo et. al., 2019).

Supplementation of polyphenols in the diet of broilers increased the level of antioxidant enzymes, i.e. superoxide dismutase (SOD), glutathione peroxidase (GSH-Px), while reducing malondialdehyde (MDA) (MDA is by product of lipid peroxidation) levels in serum, liver and thigh muscle samples (Hashemipour et. al., 2013).

Classification of phenolic compounds



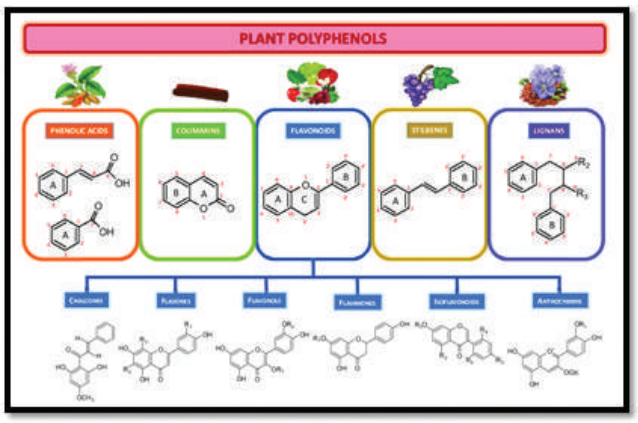
Expressing the biological functions of dietary phenolic compounds rely on their bioavailability (Abbas et. al., 2017), which is different from one polyphenol to another (Scalbert et. al., 2005).

Courtesy ResearchGate

Once absorbed, polyphenolic substances are conjugated by methylation, sulfation, and glucuronidation or a combination in the intestinal mucosa and inner tissues (Han et. al., 2007). However, gut absorption of different polyphenols classified according to their chemical forms.

Phenolics can be extracted from fresh, frozen or dried plant samples. Before extraction, the material is pre-treated by milling, grinding, drying and homogenization. Freeze-drying retains higher phenolic content levels in plant samples than air-drying (Abascal, K et. al., 2005). Phenolic extracts with a high anthocyanin content may also be obtained by using an acidified organic solvent such as methanol or ethanol (Ajila, C.M. et. al., 2011).

Major class and their beneficial activity



Immunomodulation - Polyphenols can modulate pro-inflammatory genes expression and cytokines production as well as to impact on populations of immune cells (John et al., 2011; Karasawa et al., 2011) by controlling inflammatory response and neutralize inflammatory cytokines and adhesion molecules through the activation of Toll-like receptors (TLR) to NF-κβ (TLRs/NF-κβ) signaling pathway (Wullaert et. al., 2010).

Gut health modulation - Polyphenols can be used to improve gut health due to their established health benefits and strong antioxidant potential. The interaction between polyphenols and the gut microbiota further generates active metabolites, which can modulate the composition of the chicken gut microbiota (Yasir Iqbal et. al., 2020).

Gut ultrastructure development - Polyphenols may exert effects on gut morphology. Feeding broilers with essential oils containing polyphenols caused an increase in villus height in the duodenal section of the gut (Das Q. et. al., 2020). It can also increase absorptive surfaces of the small intestine by modifying its length, crypt depth, and villus width in broilers with lipopolysaccharide stress (Kamboh A. A. et. Al., 2014). via ZO-1 and Claudin3 expression and modulation of gut microbiota.

Anti-inflammatory activity - inhibit inflammatory enzymes like COX and LOX, downregulating signaling pathways like NF-κB, and reducing the production of pro-inflammatory cytokines which is caused by heat stress and mycotoxins, improve gut health, and may enhance productivity and meat quality (Jingyang Zhand et. al., 2024).

Properties of an ideal antioxidant-

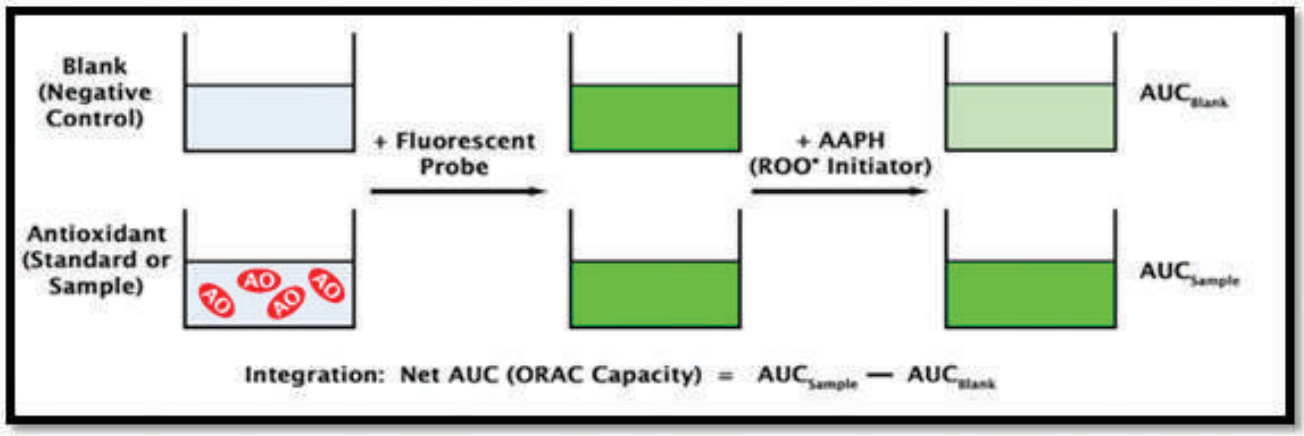
What to look for?

- Bioavailability – Should be highy bioavailable
- Water-solubility is needed to work perfectly in the intracellular aquous medium
- Small molecules - for excellent intracellular penetration
- Ability to quench free radicals at a faster pace with efficiency

What to expect?

- Active in gut and in body
- Cell wall activity
- Intracellular activity

Oxygen radical absorbance capacity (ORAC) It is a laboratory test that measures the antioxidant capacity of a substance. It quantifies a substance's ability to neutralize free radicals, which are linked to cell damage. While widely used to assess antioxidant power in foods and supplements, ORAC is an in vitro (test- tube) measure which is a very important tool to access ability of the antioxidant to quench free radicals in the given solution (Birendra Mishra et. al., 2019).



Major class of antioxidants, active ingredients, sources and their beneficial effect

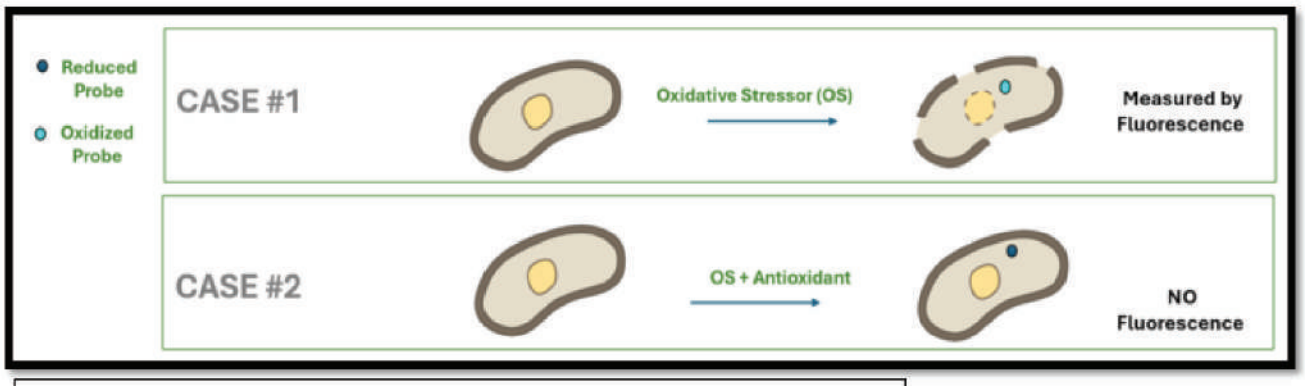
Group	Polyphenolic compound	Example of compound	Source	Health benefits	References
Flavonoids	Anthocyanins	Cyanidin, Pelagonidin, Delphinidin, etc.	Black current, blackberries, cherries, strawberries, raspberries, chokeberry.	Antioxidant, anti-inflammatory and antimicrobial	*L Changxing 2018*
	Isoflavones	Genistein, daidzein, equol, etc.	Soybean and its products, peas, lentils, grapes	Antioxidant, reproduction, bone health, immunity	*Zengpeng LV 2018*
	Flavonones	Hesperctin, Eriodictyol, etc.	Grape fruit, oranges, Tangerines, Peppermint	Anti-inflammatory, antioxidant, and tumor	*V S Shilpa 2023*
	Flavonols	Quercetin, Kaempferol,	Onions, Broccoli, Black tea, Lettuce, Apples, Dill weed	Antioxidant, antimicrobial, anti-infl., antiviral, cancer	*F. Aghababaei 2023*
	Flavones	Apigenin, Luteolin, Diosmin	Celery, Parsley, Red pepper, Lemon, Oregano, Rosemary	Reduces autophagy and apoptosis in lymphocytes	*Y. Jin 2025*
	Flavanols	Catechin, Epicatechin, Epigallo.	Tea, grapes, apples, blackberries, apricots	Antioxidant, improve gut health, antimicrobial	*B. Tian 2025*
Non-flavonoids	Phenolic acid	Caffeic, chlorogenic acid, ferulic acid	Coffee, olives, cabbage, apples, cherries, tomatoes,	Antioxidative, liver health and growth promotion	*P. Zha 2023*
	Lignans	Pinoresinol, podophyllotoxin, steg.	Linseed, sesame, chives, nuts	Antioxidant, immunity and antimicrobial	*Shad Mahfuz 2011*
	Stilbenes	Resveratrol	Red wine, red grapes, peanuts, blueberries, raspberries.	Antioxidant, anti-inflammatory, gut health	*Yang, Chen, et al.*

The redox potential of an antioxidant measures its ability to donate electrons to neutralize free radicals. A more negative redox potential indicates a stronger reducing agent, meaning it is more effective at donating electrons, it is also called as oxidation reduction potential (ORP) (Sajan George et. al., 2020).

Nutrient	Reduction capacity (E (mv)	Reference
PUFA (Polyunsaturated fatty acid)	600	*Briana M. Bohannon 2019*
Pigments (Carotenoids)	530 to 1000	*Marc Burke 2001*
Astaxanthin	768	*Marc Burke 2001*
Canthaxanthin	775	*Sefadzi Tay-Agbozo 2018*
Zeaxanthin	530 to 571	*M. Kleinova 2007*
βcarotenes	567 to 691.5	*Ruth Edge 2000*
Antioxidant vitamins	80 to 500	*Zelalem Bitew et. al., 2018*
Vitamin E (α tocopherol)	480	*Richard D. Webster 2022*
Vitamin C (Ascorbate)	282	*IMM Malebana 2009*
General Polyphenols	28 to 950	*Jan F. stevens 2018*
Selective polyphenols	28 to 260	*Paul Kilmartin 2003*

Cellular Antioxidant Activity (CAA) Assay/ Intracellular oxidative stress (ICOS): This is a cell-based assay where cells are pre-incubated with the potential antioxidant compound. A cell-permeable non-fluorescent probe, like DCFH-DA, enters the cell and is deacetylated by cellular esterases to H2DCF (dichlorofluorescin), which remains trapped inside the cell.

Subsequent exposure to a free radical generator (e.g., menadione or H2O2) causes the H2DCF to be oxidized to the highly fluorescent DCF. Antioxidants within the cell inhibit this oxidation, resulting in a decrease in fluorescence intensity that can be quantified using a fluorescence microplate reader or confocal microscopy, the cells without antioxidant or with less cellular antioxidant has higher oxidation, which leads to higher the florescence reading (Meng, D. et. al., 2017).



No fluorescence, means there is no intracellular oxidation. Courtesy- Impextraco, Belgium

The cells exposed to oxidative stressors with intracellular antioxidants can maintain cell integrity.

Selected polyphenols through careful consideration of certain properties like bioavailability, small molecules, water solubility, strong antioxidants, antioxidant activity at the cellular membranes and within the cell and activity in the gut and tissues will end up with substantial improvement meat and egg quality and zoo-technical performance like improvement in egg production and fertility and hatchability

in breeders.

There is significant improvement in the egg production, hatchability and fertility in breeders after dietary supplementation of polyphenols (Abdul Hafeez et. al., 2024). This will also help in extending shelf life of table eggs (Muhammad Suhaib Shahid et. al., 2022) and meat (Paulo E S Munekata et. al., 2021).

Low fertility in aging roosters is attributed to an imbalanced testicular oxidant-antioxidant system, with increased reactive oxygen species (ROS) damaging spermatogenic epithelium. However, antioxidant components can enhance antioxidant defenses in aging broiler breeder roosters (Sarallah Yarmohammadi Barbarestani et. al., 2024). Protection against oxidative damage, particularly in the testes, improves reproductive hormone concentrations (Mohamed Ezzat Adb El-Hack et. al., 2022), improve testicular histology, sperm membrane function, and mitochondrial activity and thereby improves semen volume, sperm concentration, viability, motility (Yuqi Chen et. al., 2025). It also helps in improving sperm polyunsaturated fatty acid content (Micheal Ghadimi et. al., 2024), sperm-egg penetration, fertility, and reproductive performance.

Polyphenols can help controlling early embryonic death in poultry primarily by mitigating oxidative stress in both the breeder hens and the developing embryos, and by providing anti-inflammatory benefits depending on specific type and dose (Hatchability in poultry July 2025 Nor-Feed). Not all the polyphenols have this property

There are more than 8000 active molecules of polyphenols but selection of the molecules, their source plants, time of harvest and method of extractions are key elements in the polyphenol activity in the birds. The same molecules can have pro-oxidant effects on the other cells which is facilitated by the hydroxyl group at the 3 position on the B ring in presence of oxygen and copper ions (Majewska and Czeczot et. al., 2009; Procházková et. al., 2011). Hence, the key is to select the right polyphenolic molecule at the right concentration from the immense range of polyphenolic compounds to avoid adverse health effects.

Conclusion:

The present review has shown the direct co-relation of dietary polyphenols and their beneficial impacts on gut health and absorption of macro and micro nutrients in the gut by maintaining intestinal barrier function.

Polyphenols help in maintaining immune status, anti-inflammatory activity of the cells, antimicrobial and antiviral properties. They also help in improving body weight gain, feed intake, feed conversion, immunomodulation and nutrient utilization.

Dietary polyphenols help in improvement in shelf life of poultry meat by reducing pectoral myopathies and woody breast by increasing fiber number per field while decrease in fiber area.

Polyphenol supplementation helps in improvement of egg production and maintaining internal and external quality of table eggs.

Supplementing broiler breeder diets with appropriate levels of polyphenols can improve immune status, reproductive performance and hatchability, potentially resulting in the production of 2 to 3 extra day-old chicks per hen. This improvement is primarily attributed to the antioxidant effects of polyphenols. It optimizes avian reproductive performance through redox equilibrium regulation.

Polyphenols exert extra benefits in improving zoo-technical performance rather than only a mere antioxidant.

NATIONAL EGG CO-ORDINATION COMMITTEE

DAILY/MONTHLY EGG PRICES SUGGESTED BY NECC AND PREVAILING PRICES AT VARIOUS PRODUCTION CENTRES (PC) AND CONSUMPTION CENTRE (CC)

FOR THE MONTH OF FEBRUARY 2026

Name Of Zone / Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
NECC SUGGESTED EGG PRICES																																
Ahmedabad	530	530	530	530	535	540	545	545	530	530	530	530	535	540	545	545	545	545	545	525	525	525	515	515	515	515	515	-	-	-	-	531.67
Ajmer	465	470	470	470	485	490	490	470	450	455	455	460	480	483	483	485	485	485	475	475	465	465	465	477	483	483	468	-	-	-	-	473.59
Barwala	441	444	448	452	470	474	474	454	440	443	443	447	468	473	473	475	475	475	475	475	475	458	458	465	473	473	473	-	-	-	-	462.74
Bengaluru (CC)	575	560	560	560	560	560	560	560	560	560	560	560	570	575	580	585	590	590	590	590	570	570	550	550	550	550	550	-	-	-	-	566.48
Brahmapur (OD)	500	482	482	482	490	500	500	500	500	500	475	475	510	520	530	530	510	510	510	510	510	510	495	495	495	500	500	-	-	-	-	500.78
Chennai (CC)	580	580	580	570	570	570	570	570	570	570	570	580	590	590	590	600	600	600	600	600	580	580	560	540	540	540	540	-	-	-	-	575.19
Chittoor	573	573	573	563	563	563	563	563	563	563	563	573	583	583	583	593	593	593	593	593	573	573	553	533	533	533	533	-	-	-	-	568.19
Delhi (CC)	490	490	490	490	510	510	510	510	500	480	480	480	500	510	510	510	510	510	510	510	510	510	510	510	510	510	510	-	-	-	-	502.96
E.Godavari	515	467	470	475	480	480	485	485	485	485	485	485	495	505	510	515	515	515	515	515	490	490	465	475	480	480	480	-	-	-	-	490.44
Hospet	515	500	500	500	500	500	500	500	500	500	500	500	510	515	520	525	530	530	530	530	510	510	490	490	490	490	490	-	-	-	-	506.48
Hyderabad	515	485	485	485	485	490	495	495	495	495	495	495	500	510	515	520	520	520	520	520	495	495	465	465	470	470	-	-	-	-	-	496.15
Jabalpur	505	505	505	505	505	510	510	510	510	510	495	495	505	515	515	515	515	515	515	515	500	500	490	490	490	490	490	-	-	-	-	504.63
Kolkata (WB)	530	530	530	530	530	545	545	545	535	535	515	515	560	570	575	575	560	550	550	550	550	550	540	550	550	555	555	-	-	-	-	545.37
Ludhiana	455	455	455	455	457	473	473	473	455	440	443	443	452	472	472	472	475	475	475	475	475	475	475	475	477	477	477	-	-	-	-	465.78
Mumbai (CC)	570	560	550	550	555	560	565	570	570	570	560	550	560	570	580	585	585	585	585	570	565	555	545	540	540	545	545	-	-	-	-	562.41
Mysuru	577	562	562	562	562	562	562	562	562	562	562	562	572	577	582	587	592	592	592	592	570	570	550	550	550	550	550	-	-	-	-	567.96
Namakkal	525	525	525	525	525	525	525	525	525	525	525	525	530	530	530	535	540	540	540	540	520	520	500	500	500	500	500	-	-	-	-	523.15
Pune	570	560	560	550	555	560	565	565	565	565	555	555	560	570	575	580	580	580	580	570	560	555	545	545	545	545	545	-	-	-	-	561.48
Raipur	492	480	475	476	475	480	475	490	490	470	465	465	490	505	510	510	510	500	485	485	485	485	465	470	480	480	485	-	-	-	-	484.37
Surat	545	545	545	545	545	550	555	555	555	545	545	540	540	545	550	550	555	555	555	545	535	535	525	520	520	520	525	-	-	-	-	542.41
Vijayawada	550	500	500	500	505	505	515	515	515	515	515	515	525	525	525	525	525	525	525	530	530	530	500	500	500	500	500	-	-	-	-	515.37
Vizag	515	490	490	490	490	490	490	490	490	490	490	490	490	505	510	515	515	515	515	515	500	500	480	480	485	485	485	-	-	-	-	496.3
W.Godavari	515	467	470	475	480	480	485	485	485	485	485	485	495	505	510	515	515	515	515	515	490	490	465	475	480	480	480	-	-	-	-	490.44
Warangal	517	487	487	487	487	492	497	497	497	497	497	497	502	512	517	522	522	522	522	522	497	497	467	467	472	472	472	-	-	-	-	497.19
Prevailing Prices																																
Allahabad (CC)	519	510	510	519	529	529	529	529	519	514	510	510	524	533	533	533	533	533	524	524	524	524	524	524	524	524	524	-	-	-	-	523.41
Bhopal	500	500	500	500	500	510	510	510	500	500	485	485	500	520	520	520	520	510	510	500	490	490	490	480	480	480	480	-	-	-	-	499.63
Indore (CC)	490	500	500	500	510	520	520	510	490	490	490	500	510	510	510	510	510	510	505	505	505	505	500	500	500	500	500	-	-	-	-	503.7
Kanpur (CC)	490	490	490	500	510	510	510	500	486	486	486	486	500	510	510	510	510	510	500	500	500	500	500	500	514	514	514	-	-	-	-	501.33
Luknow (CC)	524	524	524	533	533	533	533	524	514	514	514	514	529	533	533	533	533	533	524	524	524	524	524	524	538	538	538	-	-	-	-	527.26
Muzaffurpur (CC)	500	500	505	510	525	525	525	510	490	495	490	490	510	515	515	520	520	520	515	515	505	505	500	510	520	520	515	-	-	-	-	510
Nagpur	510	500	500	500	500	510	520	520	530	515	505	505	515	515	525	530	530	530	530	520	520	520	520	490	520	520	520	-	-	-	-	515.56
Patna	500	500	505	510	525	525	525	510	490	495	490	490	510	515	515	520	520	520	515	515	505	505	500	510	520	520	515	-	-	-	-	510
Ranchi (CC)	548	542	528	514	528	528	528	528	528	528	523	523	571	571	548	548	538	538	528	514	514	514	514	514	528	528	528	-	-	-	-	531.19
Varanasi (CC)	517	500	500	510	517	523	523	517	510	500	500	500	517	523	523	523	523	523	517	517	517	517	517	514	530	530	517	-	-	-	-	515.74

Cargill Mycotoxin Survey

Survey Period: January'25 – December'25

Total Analyses 14,340

% Analyses Above Cargill Performance Risk Threshold: 77%

Total Contaminated Analyses Above Detection Limit 13,910

Percent Contaminated Analyses Above Detection Limit: 97%

Mycotoxin Contamination Pattern

Category	KPI	Aflatoxin (Total)	Fumonisin	Ochratoxin	T2 Toxin (Total)	Vomitoxin	Zearalenone
General	N° Samples	13,754	143	19	148	136	140
	Average (ppb)	35	1054	12	31	204	42
	Maximum (ppb)	479	19,486	53	198	9,282	556
	Standard Deviation	46	6,197	17	43	826	71
Contaminated	N° Positive	13,550	85	9	92	90	84
	% Contaminated	99%	59%	47%	62%	66%	60%
	Average Contamination in ppb	36	1773	26	51	309	70
Above Performance Resk	N° Above Performance Risk	10,824	19	4	59	24	54
	% Above Performance Risk	79%	13%	21%	40%	18%	39%

- **Primary Driver of Loss: Aflatoxin**
- **Secondary Watchlist: T2 Toxin, Zearalenone**
- **Background Noise: DON, Fumonisin, Ochratoxin**

% Above Performance Risk ■ 0-24% ■ 25-49% ■ 50-74% ■ 75-100%

Mycotoxin Contamination Pattern : DeOiled Rice Bran (DORB)

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin (Total)	9,845	100%	82%	28	350	25
Fumonisin	46	61%	13%	1232	19,723	2,968
Ochratoxin	4	50%	0%	6	10	4
T2 Toxin (Total)	47	66%	40%	46	198	41
Vomitoxin	44	73%	20%	162	821	172
Zearalenone	46	70%	48%	96	556	103

Mycotoxin Contamination Pattern : Soybean Meal

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin (Total)	164	57%	32%	6	44	26
Fumonisin	23	65%	4%	1346	7936	3,638
Ochratoxin	4	100%	75%	37	53	14
T2 Toxin (Total)	25	92%	68%	46	117	31
Vomitoxin	21	76%	19%	219	825	250
Zearalenone	21	86%	67%	61	184	41

Mycotoxin Contamination Pattern: Corn

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin (Total)	1,414	96%	52%	24	379	40
Fumonisin	46	52%	15%	532	3,126	561
Ochratoxin	5	40%	0%	17	17	8
T2 Toxin (Total)	48	35%	19%	35	92	24
Vomitoxin	43	49%	14%	272	1,933	344
Zearalenone	45	29%	4%	26	69	14

Mycotoxin Contamination Pattern : Corn DDGS

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin (Total)	1,164	100%	94%	107	479	94

% Above Performance Risk ■ 0-24% ■ 25-49% ■ 50-74% ■ 75-100%

Mycotoxin Contamination Pattern : Corn Gluten Feed

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin (Total)	647	99%	90%	65	334	54
Fumonisin	5	100%	80%	16,196	69,486	26,712
Ochratoxin	2	0%	0%	-	-	-
T2 Toxin (Total)	5	100%	100%	103	181	53
Vomitoxin	5	80%	20%	190	490	176
Zearalenone	5	80%	60%	88	220	77

Mycotoxin Contamination Pattern : Pea Nut Meal

Mycotoxin	Total Analyses	% Contaminated Above Detection Limit	% Above Performance Risk	Avg. Contamination (ppb)	Max. Contamination (ppb)	Std Deviation (ppb)
Aflatoxin (Total)	56	98%	91%	72	270	49
Fumonisin	12	58%	0%	120	328	98
T2 Toxin (Total)	12	75%	58%	98	172	70
Vomitoxin	12	100%	25%	955	9,282	2,526
Zearalenone	12	83%	67%	51	73	26

MycoSchool

Broken Kernels, Bigger Risks

How Grain Damage Accelerates Spoilage and Mycotoxin Development



- Discounted grain with cracked or broken kernels carries hidden storage and feed safety risks
- Kernel damage removes the natural protective barrier, enabling faster fungal access and growth
- Broken kernels and fines trap moisture, restrict airflow, and create localized hot spots
- Grain can deteriorate even when average moisture and temperature appear acceptable
- Cracked kernels absorb and release moisture unevenly, increasing bin instability
- Additional handling or aggressive aeration can increase breakage and accelerate deterioration
- Mycotoxins may develop without visible mold, particularly in damaged grain
- Fines negatively impact feed flow and mixing, causing uneven mycotoxin distribution
- Damaged grain requires shorter storage periods, closer monitoring, and priority sampling
- The true cost of discounted grain is paid later through quality loss, safety risk, and reduced animal performance

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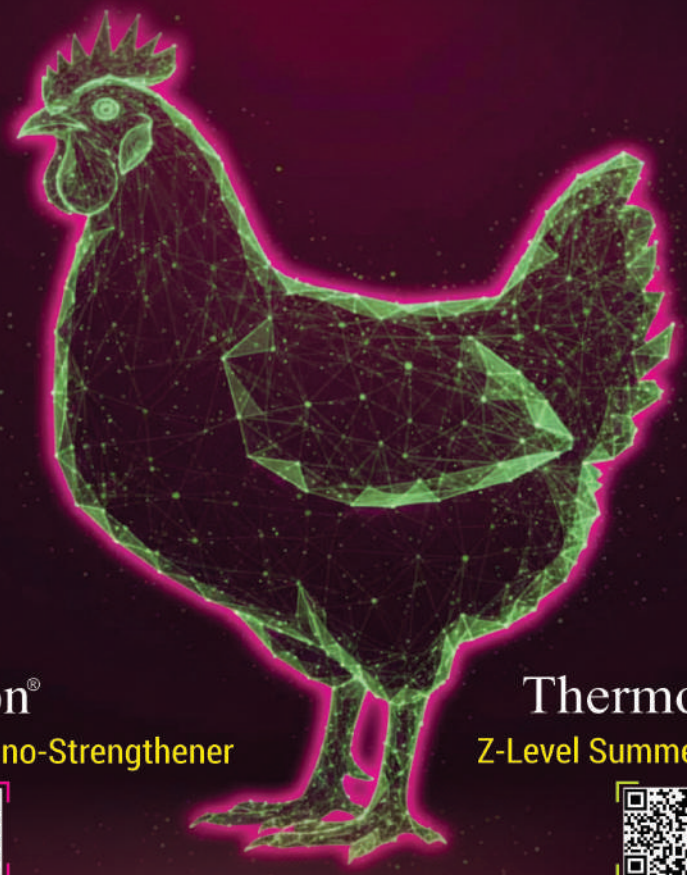

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Thermogard: Combating Heat Stress in Poultry

(Author: Dr. Rohit Rathod, Dr. Gopal Potdar*, Dr. Hardik Patel)

ABSTRACT

Heat stress is a major environmental challenge in the poultry industry, causing substantial economic losses globally. It triggers a cascade of physiological changes, including oxidative stress, acid-base imbalances, and immunosuppression, which lead to increased mortality, reduced feed efficiency, lower body weight gain, decreased feed intake, diminished egg production, and compromised meat and egg quality. Various mitigation strategies have been implemented with varying degrees of success, including nutritional interventions like feed restriction, wet or dual feeding, dietary fat inclusion, and supplementation with vitamins, minerals, osmolytes, and phytochemicals. Genetic approaches, such as incorporating naked neck (Na) and frizzle (F) genes in certain breeds, have also shown promise. This review compiles scientific evidence on the effects of heat stress on poultry health and performance, while evaluating effective mitigation strategies for broiler chickens and laying hens.

Introduction

Heat stress represents a significant threat to the poultry sector, adversely affecting bird health, welfare, and productivity. It occurs when poultry cannot achieve a balance between body heat production and dissipation, primarily due to high ambient temperatures combined with factors like humidity, radiant heat, and poor air circulation (Lara et al., 2013). Poultry species maintain a core body temperature of about 41-42°C, with optimal growth in the thermoneutral zone of 18-22°C (N.R. Kumari et al., 2018). Temperatures above 25°C are known to induce heat stress (Donkoh, 1989). In commercial settings, this stressor reduces feed intake, impairs body weight gain, and elevates mortality rates. Broilers are especially susceptible due to their rapid metabolism and high physiological demands.

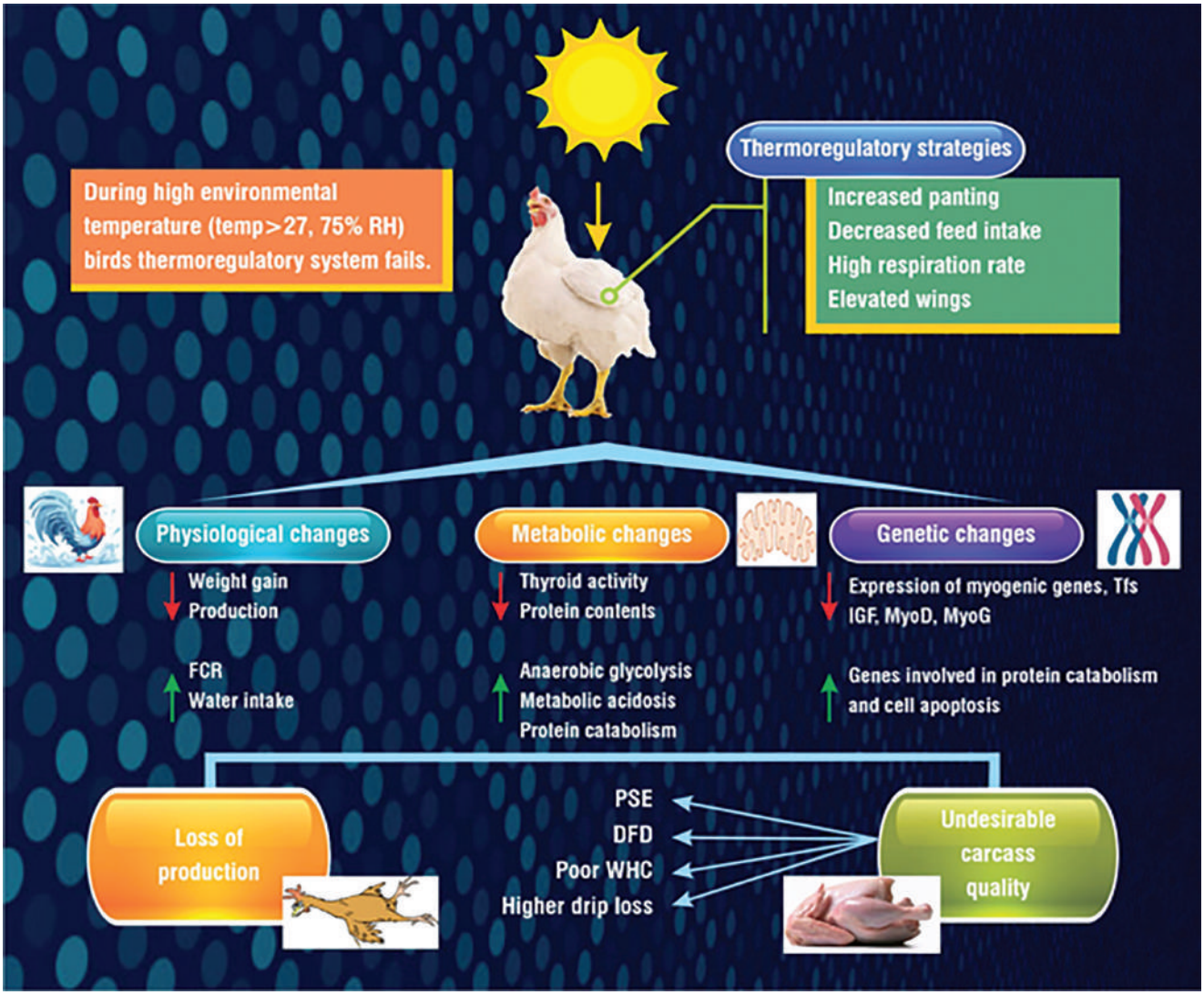
Globally, heat stress results in billions of dollars in losses annually through decreased production efficiency and increased veterinary costs. With climate change exacerbating high-temperature events, particularly in tropical and subtropical regions, the poultry industry faces escalating challenges. This review delves into the physiological, neuroendocrine, and behavioral impacts of heat stress, followed by an exploration of mitigation strategies, including the role of innovative supplements like Thermogard.

Physiological, Neuroendocrine, and Behavioural Changes in Poultry Under Heat Stress

Heat stress disrupts homeostasis in poultry, eliciting profound physiological, neuroendocrine, and behavioral responses that culminate in performance declines.

Major Effects of Heat Stress

- Oxidative Stress: Overproduction of reactive oxygen species (ROS) damages cells, leading to health disorders and reduced growth.
- Acid-Base Imbalance: Panting causes respiratory alkalosis, disrupting blood pH and impairing production.
- Suppressed Immunity: Shrinking of immune organs, reduced antibodies, and heightened disease risk.
- Performance Decline: Lower feed intake, body weight gain, egg production, and higher mortality.



Physiological Changes

Oxidative Stress

ROS, such as free radicals and peroxides, are byproducts of normal metabolism. Under thermoneutral conditions, the transcription factor Nrf2 enhances antioxidant production to maintain balance (Surai et al., 2019). Heat stress, however, increases ROS production or diminishes antioxidant defenses, resulting in oxidative stress (Mishra et al., 2019). In poultry, this leads to cellular damage, including protein, lipid, and DNA oxidation (Estevez, 2015). Severe cases can trigger reversible dysfunction, apoptosis, or necrosis (Lennon et al., 1991), contributing to stunted growth, health issues, and economic losses.

Acid-Base Imbalance

Poultry, lacking sweat glands and covered in feathers, struggle with thermoregulation. They rely on panting-rapid respiration with open beaks to evaporate heat from the respiratory tract (Richards, 1970). This expels excess CO2, altering the bicarbonate buffer system: reduced CO2 lowers H2CO3 and H+ while raising HCO3- , causing respiratory alkalosis. The kidneys compensate by excreting HCO3- and retaining H+, but this exacerbates imbalances, negatively affecting production (Borges et al., 2007).

Suppressed Immunocompetence

Heat stress weakens the immune system (Lara et al., 2013), increasing vulnerability to diseases like Newcastle and Gumboro, especially in hot seasons (Badruzzaman et al., 2015). It causes atrophy of organs such as the spleen, thymus, and lymphoid tissues (Ghazi et al., 2012), lowers antibody

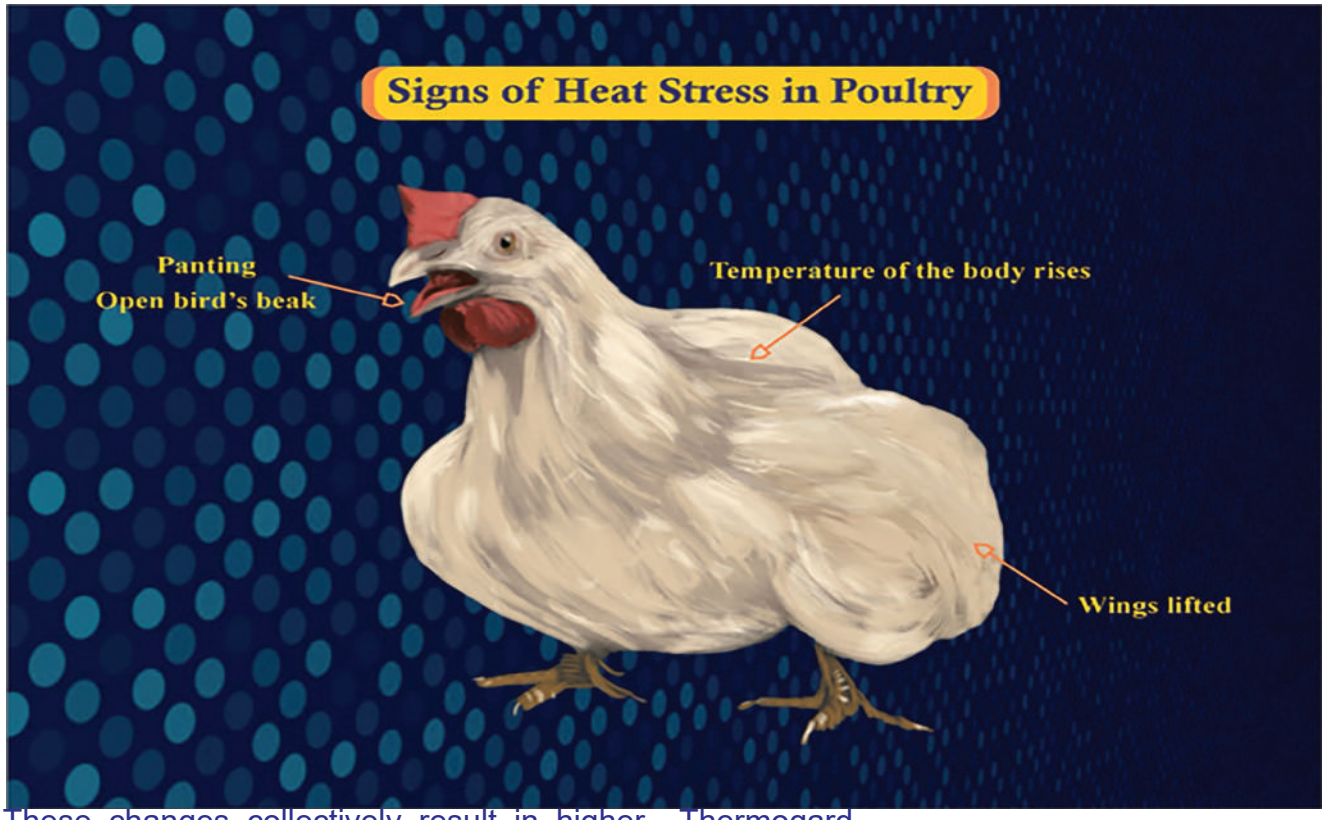
levels (Bartlett et al., 2003), reduces white blood cells, and raises the heterophil-to-lymphocyte (H/L) ratio, a key stress marker (Mashaly et al., 2004). Heat exposure can also lead to gut barrier dysfunction, increasing susceptibility to enteric infections (Song et al., 2012).

Neuroendocrine Changes

The neuroendocrine system plays a crucial role in stress response. Acute heat activates the sympathoadrenal medullary (SAM) axis, releasing catecholamines from the adrenal medulla, leading to hyperglycemia, glycogen depletion, increased respiration, vasodilation, and heightened neural activity (N.R. Kumari et al., 2018). Chronic stress engages the hypothalamic-pituitary-adrenal (HPA) axis: hypothalamus releases CRH, pituitary secretes ACTH, and adrenals produce corticosteroids for gluconeogenesis and elevated glucose (Smith et al., 2006). Heat also reduces thyroid hormones (T3 via decreased T4 deiodination) (Decuypere et al., 1988; Quinteiro et al., 2012), impairs gonadotrophin-releasing hormone (Nawab et al., 2018), and lowers sex hormones like progesterone, testosterone, and estradiol (Rozenboim, 2007), impacting growth and reproduction (Quinteiro et al., 2012; Yoshida et al., 2011).

Behavioural Changes

To cope with heat, poultry exhibit adaptive behaviors: reduced activity (less walking/standing), decreased feed intake with increased water consumption, wing spreading for airflow, and litter wallowing for cooling. Panting is prominent, often with lethargy and reduced social interactions (Lara et al., 2013). While this aid survival, they reduce nutrient intake and energy for production, worsening losses.



These changes collectively result in higher mortality, poor feed efficiency, reduced body weight, inferior product quality, and elevated FCR. Amid rising global temperatures, heat stress poses an ongoing economic threat.

Comprehensive Heat Stress Protection with Thermogard

Thermogard offers multifaceted protection against heat stress:

- Antioxidant Defense: Neutralizes free radicals, reducing oxidative damage.
- Immune Support: Bolsters immunity,

lowering disease susceptibility.

- Metabolic Balance: Maintains pH, electrolytes, and hydration.
- Performance Enhancement: Boosts feed intake, growth, egg production, and efficiency.

Strategies to Mitigate Heat Stress in Poultry

A combination of nutritional and management strategies can alleviate heat stress effects.

Feed Restriction

Restricting feed during hot periods (e.g., 8 a.m.- 5 p.m.) reduces metabolic heat, lowering rectal temperature and mortality (Uzum et al., 2013) while decreasing abdominal fat (Mohamed et al., 2019). However, it may slow growth (Uzum et al., 2013). Dual feeding- protein-rich in cool hours (4 p.m.- 9 a.m.) and energy-rich in warm- reduces temperature and mortality but not necessarily growth (Basilio et al., 2001; Lozano et al., 2006).

Adding Fat in the Diet

Fat produces less metabolic heat than proteins or carbs (Musharaf et al., 1999). At 5%, it slows digesta passage for better utilization (Mateos et al., 1982) and increases energy density (Attia et al., 2018). In layers, it boosts feed intake by 17% (Daghir, 2008); in broilers, it enhances performance (Ghazalah, 2008).

Vitamins

Vitamin E

A fat-soluble antioxidant, it neutralizes radicals and reduces inflammation (Dalolio et al., 2015). At 250 mg/kg in layers, it improves egg quality by protecting liver and vitellogenin (Khan et al., 2011; Bollengier et al., 1999; Yardibi et al., 2008; Mishra et al., 2019). In broilers, it lowers MDA and raises vitamin levels (Sahin et al., 2001).

Vitamin A

Supports immunity and radical neutralization (Sklan, 1994; Palace et al., 1999). Doses of 6000- 9000 IU/kg enhance egg weight and antibodies (Lin et al., 2002); in broilers, it improves growth and reduces MDA (Kucuk et al., 2003).

Vitamin C (Ascorbic Acid)

Scavenges ROS and boosts immunity (Traber et al., 2011; Carr, 2017). Heat stress depletes endogenous synthesis (Khan et al., 2012). At 250 mg/kg, it enhances growth, egg quality, immunity, and antioxidants, while reducing corticosterone.

Minerals

Zinc

Vital for enzymes, antioxidants, immunity, and bones (Prasad, 2002). Induces metallothionein for scavenging (Oteiza et al., 1996) and aids eggshell formation (Balnave et al., 1997). Organic zinc (40 mg/kg) boosts growth, lowers peroxides, and raises SOD (Rao et al., 2016; Lee, 2018).

Chromium

Enhances insulin and metabolism (Vincent, 2000; Hayirli, 2005). 200-1200 µg/kg improves broiler weight, intake, carcass, and hormones (Sahin et al., 2002); in layers, 0.4-2 mg/kg boosts immunity and egg quality (Sahin et al., 2002; Torki et al., 2014). It optimizes glucose use and reduces metabolic disturbances.

Selenium

Key for selenoproteins like glutathione peroxidase (Zhou et al., 2013). 0.3 mg/kg enhances FCR and weight in broilers (Rahimi et al., 2011) and layer performance (Attia et al., 2010).

Electrolytes

Mitigate alkalosis with NH4Cl, NaHCO3, KCl (Ahmad et al., 2008). NaHCO3 (0.5%) restores pH, improves eggshell (Balnave et al., 1997; Mushtaq et al., 2013), and broiler performance (Benton et al., 1998). They maintain hydration, nerve/muscle function, and thermoregulation.

Betaine

An osmolyte, it preserves cell water, donates methyl, reduces inflammation, and supports gut (Craig, 2004; Ratriyanto, 2018; Zhao, 2018). 0.05-0.20 % boosts intake, carcass, and eggs (Ratriyanto, 2018; Chand et al., 2017). With vitamin C (1000 + 200 mg/kg), it enhances layers (Attia et al., 2016).

Herbs and Phytogenics

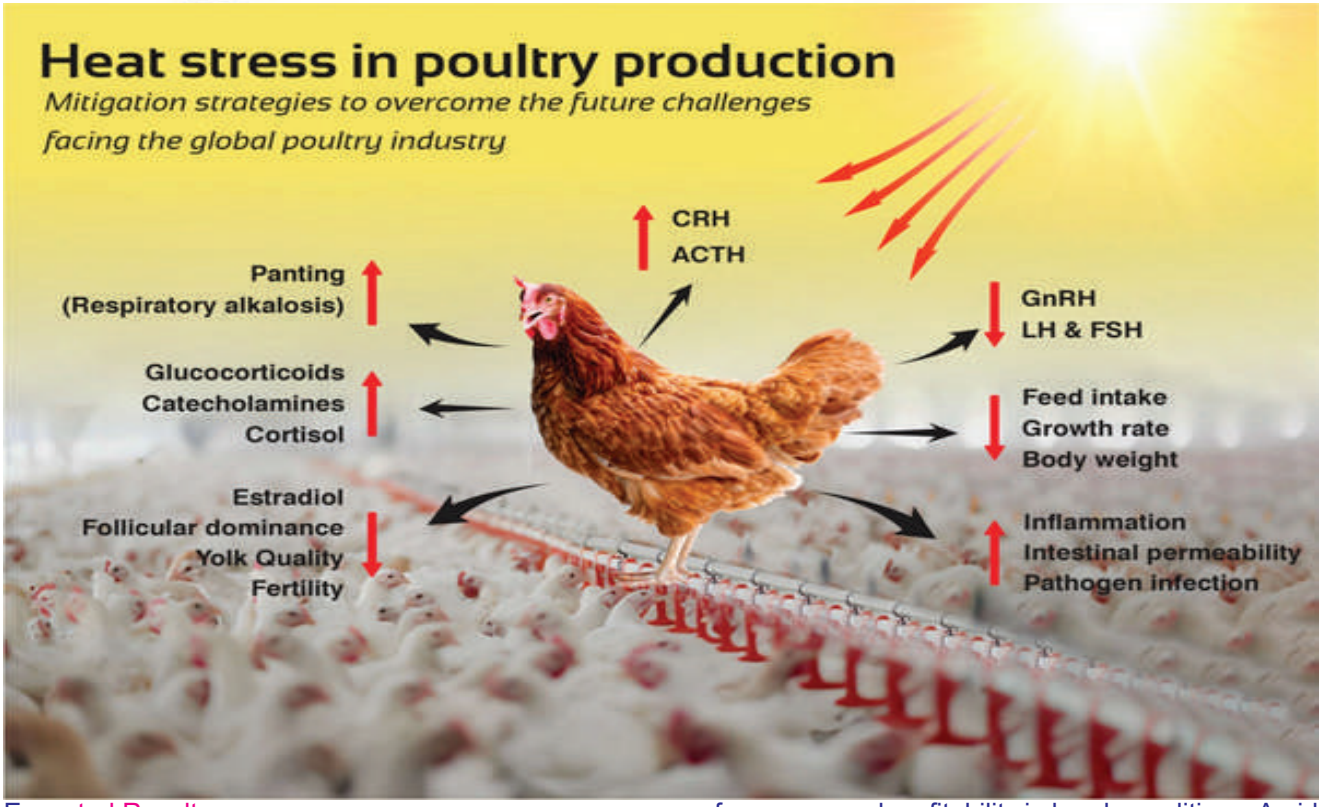
Phytogenics scavenge ROS, activate antioxidants, and inhibit oxidants (Thring et al., 2011; Schewe et al., 2008). Key ones include fennel, amla, thyme, rosemary, bael, giloy, lemon, moringa, and menthol.

Key Ingredients and Their Benefits

- Amla (Indian Gooseberry): Rich in vitamin C and antioxidants, combats oxidative stress, enhances immunity, improves digestion, supports liver, and aids stress adaptation.

- Bael (Aegle marmelos): Improves gut health and absorption, maintains electrolytes, reduces GI issues, and provides cooling.
- Giloy (Tinospora cordifolia): Immunomodulator that strengthens disease resistance, has antipyretic effects, boosts antioxidants, and enhances resilience.

- Lemon (Citrus limon) Extract: Maintains digestive pH, provides vitamin C, supports electrolytes, and improves feed palatability.



Expected Results

- Reduced mortality during heat periods
- Improved feed intake and FCR
- Enhanced egg production/quality in layers
- Better growth and carcass in broilers
- Stronger immunity and resistance
- Increased profitability via efficiency

Conclusion

Thermogard is a scientifically formulated supplement blending herbal extracts, vitamins, minerals, and nutrients to address heat stress holistically. Drawing from traditional herbs and modern science, it targets all key disruptions. Regular use ensures bird health, performance, and profitability in harsh conditions. Amid global warming, no single strategy works; Thermogard, from Z-Level Summer Protection, integrates amla, bael, giloy, lemon, betaine, vitamin C, chromium, electrolytes, menthol, and more. Pair with optimized nutrition, housing, and management for best results.

*= Contact to know more about dosage, information or references:

Dr. Gopal Potdar, Regen Biocorps AHI (P) Ltd., Vadodara

Mob. No.: 9510964755 / 9824657585

E mail ID: drgopal.potdar@regenbiocorps.com

pmt@regenbiocorps.com

Namakkal Poultry Hub Sets Global Benchmark at 4th Techno-Commercial Hybrid Seminar: A Fusion of Al, Sustainability, and Social Ethics

The 4th edition of the Techno-Commercial Hybrid Seminar (TCHS) successfully concluded in Namakkal, India's primary egg export hub, marking a decisive shift towards international standards in poultry farming. Organized by SS Agrowtech under the stewardship of Mr. Rex Christi Raj, the event united industry veterans, government officials, and international consultants to chart the sector's modernization while reinforcing its ethical backbone. With Namakkal handling 95% of the country's egg exports, the forum emphasized the urgent transition from open farms to Environmentally Controlled (EC) sheds to combat tropical climate challenges. The seminar was unique in its dual focus: introducing cutting-edge automation in Environmentally controlled Sheds while simultaneously addressing labour welfare. Commitment to Social Responsibility Presiding over the event, the District Collector of Namakkal, Dr. S. Uma, issued a stern directive regarding the welfare of the migrant workforce that powers the industry. "Die occupies- holds vicarious responsibilities nap ant workers, mandating a strict 'Zero Child Lobo; ' policy regardless of contractor involvement. It is not just about establishing ox industry you have to be cautious about the environment and ensure education for the workes' children."

Showcase of Technical Innovation The seminar featured a series of technical presentations designed to optimize production and biosecurity.

- Ventilation Logic: Experts emphasized the critical relationship between air velocity and relative humidity, noting that in tropical climates, airspeed must increase to keep birds in Use thermal neutral zone.
- **Alpha Panels:** The presentation showcased high-density insulated panels for hatcheries and cold storage, designed to prevent energy loss and maintain strict

hygiene standards.

- **Non-Thermal Plasma Sanitization:** A breakthroughs organic technology was introduced that reduces chemical usage by 90% while ensuring 100% infection-free environments for exports.





Broiler Lifting Rates for the month of JANUARY_2026

Place	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Hyderabad	147	147	147	147	147	147	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	150	140	140	140	135	135	135	135	135
Karimnagar	147	147	147	147	147	147	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	150	140	140	140	135	135	135	135	135
Warangal	147	147	147	147	147	147	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	150	140	140	140	135	135	135	135	135
Mahaboobnagar	147	147	147	147	147	147	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	150	140	140	140	135	135	135	135	135
Kurnool	147	147	147	147	147	147	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	150	140	140	140	135	135	135	135	135
Vizag	131	133	133	143	143	143	143	143	148	148	148	143	143	145	145	145	145	145	145	145	145	140	140	135	135	135	135	135	135	135
Godavari	145	147	147	152	152	152	152	152	152	152	152	152	152	157	157	157	157	157	157	157	157	150	150	143	143	143	143	143	143	143
Vijayawada	145	147	147	152	152	152	152	152	152	152	152	152	152	157	157	157	157	157	157	157	157	150	150	143	143	143	143	143	143	143
Guntur	150	152	152	157	157	157	157	157	157	159	159	159	159	164	164	164	164	164	164	164	164	157	157	150	150	147	143	143	143	143
Ongole																														
Chittor																														
Nellore																														
Nammakkal	133	137	142	142	142	142	142	142	146	146	146	149	149	149	149	152	152	152	152	145	141	141	133	133	120	120	120	120	120	120

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Venkateshwara House, S. No. 114/A/2, Pune-Sinhgad Road, Pune - 411 030. **Tel.** : +91-20-24251803 **Fax :** (020) 24251077, 24251060
Email: ventri.biologicals@venkys.com **www.venkys.com**