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Poultry Fortune

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Bring global best practices into the local market to prevent and mitigate Antimicrobial resistance, ensuring sustainability of Animal origin food value chain

Phytase is considered the most cost-effective and efficacious additive that we have at our disposal. It has become a common ingredient in broiler and layer diets for the last 20 years although it has been on the market since late 1990. Our understanding and application of Phytase have improved over the last few years.

Dear Readers,

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

Confederation of Indian Industry, in collaboration with **EW Nutrition**, organised a round table session on the theme *One Health Approach to AMR and its Challenges in the Animal Origin Food Value Chain* on November 2, 2022. The objective of the round table session was to engage participants from various domains in discussion and enable them to contribute their perspectives and ideas on how to bring global best practices into the local market to prevent and mitigate Antimicrobial resistance, ensuring sustainability of the animal origin food value chain through *One Health Approach*. Antimicrobial resistance (AMR) is the issue in global health that most exemplifies the *One Health concept,* which aims to sustainably balance and optimise the health of people, animals and ecosystems. The COVID-19 pandemic has shown the need to strengthen health systems and surveillance for humans, animals and the environment, including infections caused by resistant pathogens, stated Mr Suresh Chitturi, Co-Chairman, CII National Committee on Animal Husbandry & Dairying, President, International Egg Commission, and Vice Chairman and Managing Director, Srinivasa Farms.

Department of Animal Science, B. A. College of Agriculture and NAHEP-CAAST Project, Anand Agricultural University, jointly organized lectures on *"Goodness of Chicken Egg: Nature's Perfect Food"* on the occasion of World Egg Day on 14 October 2022 at Anand, Gujarat. Dr M. K. Jhala, Director of Research and Dean PG studies, AAU, Anand in his presidential address focused on the goodness of chicken egg and how it is a perfect food and also briefed the participants about poultry activities carried out by AAU, Anand.

"National Chicken Day" was celebrated in Pune on November 16, 2022 in memory of late Padmashri Dr B.V. Rao. Mr C. Vasanth Kumar, President, Poultry Farmers & Breeders Association – Maharashtra declared the National Chicken Day celebrations after lighting the lamp and putting a garland on the image of Padmashri Dr B.V. Rao. National Chicken Day (NCD) was celebrated in Maharashtra, West Benagal, Chattisgarh and Karnataka States. The organizers aim to spread NCD all over India in the coming years and it is aimed to bring public awareness on the importance of chicken as a nutritious and protein food. PFBA - Maharashtra, Karnataka Poultry Farmers & Breeders Association, Civbha and West Bengal Poultry Federation are organised various programs during this campaign. It includes chicken distribution, awareness programs, lectures, demos and training. The Association which has 106 members, out of which 80% are integrators and 20% chick sellers, has been striving hard for the welfare of poultry breeders and farmers. These members collectively contribute four crores of broilers per month.

Alltech opened its newest Bioplex plant on 2 November 2022, the first organic mineral production facility in Vietnam. The manufacturing plant is Alltech's eighth mineral production facility worldwide. The plant's production capacity is 7,000 metric tons per year and it has the potential to create 100 new jobs, while being conveniently located to serve local customers and support import / export activity.

Contd on next page

NRS GROUP

Poultry Fortune

Our Mission

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

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

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

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

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

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Alltech India team organized a Poultry School in Karnal, Haryana on 19 November 2022 to share the latest studies, innovative solutions and best feed milling practices with its poultry customers. Alltech also hosted the Feed Manufacturer's Forum in Ludhiana on 17 November 2022 to discuss feed quality optimization and mycotoxin mitigation. Dr Nick Adams, Alltech's Global Director of Mycotoxin Management, presented on 'Mycotoxins-Facts and Mitigation' discussing on managing mycotoxins in the feed chain. He asked attendees to think twice about clean feed.

Tara Enterprises, the largest Veterinary Distribution House in India, organised its Filed Officials' Family Get-Together on 16 October 2022 at Hyderabad. Mr D.S. Subramaniam, promoter of Tara Group explained about 27 years of his Tara Group's journey with many ups and downs continuing till date and also his 42 years long journey in Animal Health Sector of India. His statement was - *having completed 42 Years of Service in Animal Health industry, I am still not tired.* Wives of Field Managers shared their husband's experiences and journey with Tara Group.

In the Articles section – *PHYTASE – A Practical and Rational Application in Broiler Rations,* *authored by* Dr H.B. Nataraja, Chairman & Managing Director, Higain Feeds and Farms Pvt Ltd, Bengaluru, said that – the application of enzymes in poultry has been a major game changer in the last two decades and is continuously updated every now and then. Among exogenous enzymes used in poultry diets, Phytase has been universally accepted as a versatile enzyme by releasing available Phosphorus from the ingredients of vegetable origin. As the majority of Phosphorus is inbound farms (almost 2/3rd), this helps in saving a significant amount of feed costs and reducing the use of inorganic phosphates in the diets. The use of Phytase has also beneficial effect in terms of sustainable production by reducing Phosphorus excretion in the litter.

Phytase is considered the most cost-effective and efficacious additive that we have at our disposal. It has become a common ingredient in broiler and layer diets for the last 20 years although it has been on the market since late 1990. Our understanding and application of Phytase have improved over the last few years. Till recently, Phytase benefits were attributed to its direct effect i.e., degradation of Phytate P which is abundantly present in the cell wall of plant ingredients neglecting the other extra benefits – the "Extra Phosphoric" effect of Phytase. We can now see it has been used rationally by the majority of producers and getting maximum benefits in terms of savings as well as improved performance.

Another article titled ***Enhancing the Biosecurity system in Poultry farming through Oxidation chemistry,*** *authored by* Dr Rajib Upadhyaya, Product Manager – Poultry, Cargill Animal Nutrition and Health, discussed that the efficient sanitisation and disinfection of poultry facilities is one of the crucial biosecurity measures that are covered in the article. How sanitation and disinfection play an ideal role in reducing the development of antibiotic resistance given the current trend of use and growing production in poultry farms. The use of oxidizing agents and other alternative chemistries with respect to their efficiency in sanitization and disinfection are highlighted in the article. The article features the benefits of the ORP method for evaluating the environment and water quality, and places emphasis on the wise use of oxidizing agents for the efficient destruction of pathogens and enhancing the productivity. To the readers, the article explains how oxidizing agents, when combined with optimal measurements and estimating procedures, can be a versatile and highly effective chemistry to raise drinking water quality and achieve environmental disinfection, for enhancement of overall production.

Article titled ***Mycotoxins in feed and how to handle them,*** *authored by* Dr S.K. Maini, General Manager – Technical, Vesper Group, Bengaluru, informed that Mycotoxicosis cause significant economic loss associated with their consumption in poultry, are difficult to diagnose, cause immune suppression and vaccine failures, lowers poultry production and performance, affects the domestic as well as international trade, simultaneously entering the human food chain. Grains stored under high moisture / humidity (above 15%) at warm temperatures (above 25°C) or / and inadequately dried prior to storage can potentially become contaminated with fungi, that later produce the mycotoxins, that cause mycotoxicosis. The grains and cakes intended for poultry feeds, if not stored in well ventilated dry place, free of damage from insects, can result in mold "hot spots". Initial growth of fungi in grains and cakes can produce sufficient moisture from their metabolism to allow for further mold growth and mycotoxin formation.

Another article titled ***Jugalbandi (joint action) of Enzymes & Probiotics in feed digestion & gut health,*** *authored by* Dr Mahesh Rajurkar, Product & Techno-Commercial Manger and Dr Ramdas Kambale, CEO & Board Member, GLOCREST Pharmaceutical Pvt Ltd, Mumbai, said that Proper blend of enzymes and unique strains of probiotics is the most required practice to improve performance, feed utilization, gut health and minimized environmental pollution. Enzymes in Enziprob are Xylanase, Alpha amylase, cellulase, Protease, Mananase, Lipase and Phytase. These are digestive enzymes which are natural substances needed by body to help break down and digest feed ingredients. Probiotics in Enziprob are Lactobacillus acidophilus, Saccharomyces boulardii, Bacillus subtilis, Bacillus licheniformis, Bacillus megaterium, Bacillus polymyxa. These are different type of bacteria used to improve digestion and restore normal flora.

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

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

M.A.Nazeer
Editor & Publisher
Poultry Fortune

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CII - EWN Round Table Session on One Health Approach to AMR & its challenges in Animal Origin Food Value Chain

From left to right: ***Dr Bhupinder Singh, Managing Director & CEO, Vista Processed Foods Pvt Ltd; Dr Shirish Nigam, Managing Director, EW Nutrition South Asia; Suresh Chitturi, Co-Chairman, C II National Committee on Animal Husbandry & Dairying, President, International Egg Commission, Vice Chairman & Managing Director, Srinivasa Farms; Dr Anuj Sharma, Technical Officer – Antimicrobial Resistance, Laboratories, Infection Prevention & Control, WHO Country Office for India; Dr Vivekanandan Perumal, Professor, Kusuma School of Biological Sciences, Indian Institute of Technology (IIT), Delhi; Dr Lata Kapoor, Additional Director, Head, Centre for Bacterial Disease and Drug Resistance & AMR Program Unit, National Centre for Disease Control, Ministry of Health and Family Welfare, India.***

New Delhi: Antimicrobial resistance (AMR) is a condition where bacteria, viruses, parasites and fungi become resistant to treatments that once worked to treat them. The widespread use of antibiotics and other antimicrobials by humans, animals (including farmed fish) and plants, as well as the dispersion of their drug residues in soil, crops and water, have all contributed to the high levels of AMR that are already present on the globe today. It is considered the greatest and most urgent global risk, requiring international and national attention through a One Health approach.

With a vision to spread awareness and generate public discourse around AMR, the **Confederation of Indian Industry**, in collaboration with **EW Nutrition**, organised a round table session on the theme **"One Health Approach to AMR and its Challenges in the Animal Origin Food Value Chain"** on November 02, 2022. The objective of this round table session is to engage participants from various domains in discussion and enable them to contribute their perspectives and ideas on how to bring global best practises into the local market to prevent and mitigate AMR, ensuring sustainability of the animal origin food value chain through a One Health approach.

The programme was graced with the presence of **Mr Suresh Chitturi,** Co-Chairman, CII National Committee on Animal Husbandry & Dairying, President-International Egg Commission, and Vice Chairman & Managing Director, Srinivasa Farms; **Dr Anuj Sharma,** Technical Officer – Antimicrobial Resistance, Laboratories, Infection Prevention & Control WHO Country Office for India; **Dr Shirish Nigam,** Managing Director, EW Nutrition South Asia; **Dr Lata Kapoor,** Additional Director, Head, Centre for Bacterial Disease and Drug Resistance & AMR Program Unit, National Centre for Disease Control, Ministry of Health and Family Welfare, India; **Dr Vivekanandan Perumal,** Professor, Kusuma School of Biological Sciences, Indian Institute of Technology (IIT), Delhi; **Dr Bhupinder Singh,** Managing Director and CEO, Vista Processed Foods Pvt Ltd**.** More than 70 people from various domains attended the session and positively participated and shared their views.

«Antimicrobial resistance (AMR) is the issue in global health that most exemplifies the One Health concept, which aims to sustainably balance and optimise the health of people, animals and ecosystems. The current COVID-19 pandemic has shown the need to strengthen health systems and surveillance for humans, animals and the environment, including infections caused by resistant pathogens", **stated by Mr Suresh Chitturi, Co-Chairman, CII National Committee on Animal Husbandry & Dairying, President, International Egg Commission, and Vice Chairman and Managing Director, Srinivasa Farms.**

Addressing the session, **Dr Anuj Sharma, Technical Officer for Antimicrobial Resistance, Laboratories, and Infection Prevention and Control at the WHO Country Office for India,** said, «AMR is a complex multifactorial, multidimensional and multi sectoral issue that is poorly understood, and antimicrobials are global

public health goods. All these advances in modern medicine will go to waste if we are not able to tackle AMR. Developing state action plans in line with the national action plan and proper implementation through a One Health approach will be a step in the right direction to prevent antimicrobial resistance together".

"We know that antibiotic resistance cannot be avoided; it can only be delayed. To slow it down, we must invest in cost effective technologies. Phytochemicals could be used as antibiotic alternatives in the poultry sector to promote growth and enhance host health, which ultimately reduce antibiotic use and prevent AMR" highlighted, **Dr Shirish Nigam, Managing Director, EW Nutrition South Asia.**

Dr Lata Kapoor, Additional Director, Head, Centre for Bacterial Disease and Drug Resistance and AMR Program Unit, National Centre for Disease Control, Ministry of Health and Family Welfare, India, said, "Antimicrobial resistance (AMR) is an emerging global threat. Antimicrobial resistant infections are estimated to skyrocket and could account for 10 million deaths each year by 2050 if no actions are taken. Strict enforcement of regulation, particularly in the dispensing of antibiotics by pharmacies, together with the development and adherence to the national standard treatment protocol, is urgently required".

"Epigenetics, a stable phenotypic change that does not involve alterations in the DNA sequence, can be used to understand when you see resistance in a bacteria that is not explained by genetics. This science has the potential to use an effective diagnostic tool for AMR" said **Dr Vivekanandan Perumal, Professor, Kusuma School of Biological Sciences, Indian Institute of Technology (IIT), Delhi.**

PFI organizing its 33rd Annual General Body Meeting in Chandigarh on Dec 22

Sonepat: Poultry Federation of India (PFI), an apex and renowned association of Poultry Farmers, Breeders, Equipment Manufacturers, Pharmaceutical Companies and all allied Industries, is organizing its 33rd Annual General Body Meeting (AGM) at Hotel Hyatt Regency Chandigarh on 22 December 2022.

The Delegates registration fee is Rs 3,000 per person till November 15, 2022 and Rs 4,000 for on Spot Registration at the AGM Venue. This includes Lunch, High Tea, Cocktail, Networking Dinner and attending Musical Entertainment Program on December 22, 2022.

PFI requests companies to be one of the key sponsors at PFI 33rd Annual General Body Meeting.

There are Six categories of sponsorships:

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The Sponsor companies can display their advertisements in form of standees/ banners on the prominent locations inside the conference hall. Table space will also be provided to the sponsors near the hall entrance. The logos of all the sponsors shall be printed on PFI Invitation cards, welcome banners, main backdrop banner and on all PFI promotional banners. All sponsoring companies will be honoured by presenting them mementos during the AGM.

Kindly send the sponsorship confirmation by sending the cheque / draft in the name of Poultry Federation of India. Your support by giving sponsorships in Poultry Federation of India's 33rd AGM shall be highly appreciated. The Bank Account details are mentioned hereunder:

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PFI blocked 90 Rooms at Hyatt Regency, Chandigarh at a special price of Rs. 8500 + 18 % GST.

The hotel will hold this price until 15 November 2022. Therefore all are requested to kindly confirm their requirement for room before 15 November 2022. We shall submit the final rooming list with the hotel by 5 pm on November 15. We shall not be able to entertain any requests or amendments pertaining to rooms reservation list after 15th November 2022.

Please feel free to contact me if you need any further information.

Regards,

Ranpal Dhanda
President
Poultry Federation of India
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Department of Animal Science, B. A. College of Agriculture and NAHEP-CAAST Project, Anand Agricultural University, jointly organize lectures on "Goodness of Chicken Egg: Nature's Perfect Food"

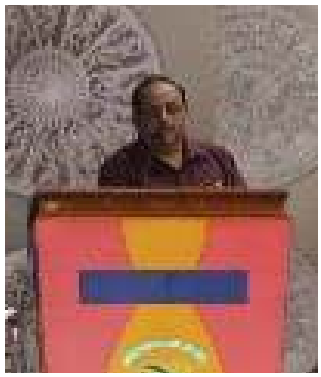
Anand: On the occasion of World Egg Day - 2022, the Department of Animal Science, B. A. College of Agriculture and NAHEP-CAAST Project, Anand Agricultural University, Anand jointly organized lectures on "Goodness of Chicken Egg: Nature's Perfect Food" on 14 October 2022 at Auditorium, BACA, AAU, Anand, Gujarat.

The program was organized in hybrid mode where about 350 participants, mainly students, faculty members, university officers, poultry farmers, veterinarians and poultry professionals attended in person as well as more than 1000 participants viewed in online mode. Dr M. K. Jhala, Director of Research and Dean PG studies, AAU,

Anand presides over the program.

The said program started with the welcome address by Dr F.P. Savaliya, Principal Scientist & Head, Poultry Research Station & CC-PI, NAHEP-CAAST, AAU, Anand which was followed by a floral welcome of eminent speakers and invited guests. After the verbal and floral welcome of speakers and guests, Dr R. S. Pundir, Principal and Dean, IABMI & PI, NAHEP-CAAST, AAU, Anand briefed about the activities of NAHEP to the august gathering. Dr Y.M. Shukla, Principal and Dean, BACA, AAU, Anand addressed the participants and briefed them about the World Egg Day program.

The presidential address was delivered by Dr M. K. Jhala, Director of Research and Dean PG studies, AAU, Anand and he focused on the goodness of chicken egg and how it is a perfect food and also briefed the participants about poultry activities carried out by AAU, Anand.



One of the two speakers Dr S.R. Anand, Director, Anand Animal Health Pvt Ltd, delivered a very interesting talk on "The Incredible Egg" and covered various aspects of production, nutritive values, myths bursting and facts about the chicken egg. Another eminent speaker Mr Samir Patel, Managing Director, Qper India Pvt Ltd delivered a talk on "Nutritive Enhancement,

Processing and Marketing of Chicken Eggs". Both lectures were informative and appreciated by participants. Some of the queries from participants were invited and attended to nicely by both speakers.

As a token of love, respect and gratitude both speakers were felicitated by presenting mementoes by the organizers.

The programme was concluded by a vote of Thanks by Dr R.M. Rajpura, Assistant Professor and Organising Secretary of the programme, Dept. of Animal Science, BACA & Co-PI, NAHEP-CAAST, AAU, Anand.

National Chicken Day Celebrated

C. Vasanth Kumar

Dr Ajay Deshpande

Both outgoing and incoming Presidents sharing pleasantries

Pune: "National Chicken Day" was celebrated in Pune on November 16, 2022 in memory of late Padmashri Dr B.V. Rao. Mr C. Vasanth Kumar, President, Poultry Farmers & Breeders Association – Maharashtra declared the National Chicken Day celebrations after lighting the Niranjan Deep and putting a garland on the image of Padmashri Dr B.V. Rao. Mr Sanjay Nalgirkar, Dr Ajay Deshpande, Mr Rajendra Thorat and Mr Krishna Charan also joined him for lighting the lamp. Vasanth Kumar welcomed the members, sponsors and traders.

The Association has 106 members, out of which 80% are integrators and 20% are chicks sellers.

Technical Seminar

Dr Chainapure Sudhakar Maroti gave presentation in the conference on the *Role of Gut Health and immunity for Optimal Production* and also guided how to prevent and control early chick mortality in progeny through presentation. **Mr Sharad Shyamsundar**, Director of Sylon Group gave the history of their company and details of the products. **Vasanth Kumar** felicitated the speakers by offering flower bouquets.

Birthday Celebrations

They have also celebrated the birthday of 17 members falling between two meetings by cutting a cake and by giving them rose flowers.

New Member

Vasanth Kumar welcomed new member Mr Sarfraj Momin, Proprietor, Huda Foods byoffering him a flower bouquet to the Association. He also felicitated chicken shop owners. The traders are declaring the prices keeping consumer in view, giving advantage of reduced farm gate price to the consumers and helping for promotion of chicken consumption. They were given LED TV which will help them to the chicken promotion videos at their shop for the consumers.

Dr Chainapure S. Maroti

- Chitra Chicken Centre – Mr Alok Pardeshi from Sahakar Nagar, Pune
- A.K. Poultry – Mr Sarfraj Akbar Shete from Camp, Pune.
- Golden Poultry – Mr Amjad Shaikh from Fatimanagar, Pune.

Felicitation

Poultry Farmers & Breeders Association, Maharashtra felicitated the President Mr C. Vasanth Kumar for his work and contribution for the development of the Association since 2006 to 2022 by offering Puneri Feta shawl, Garland and "Achievement Award". Mr Sajay Nalgirgar felicitated Mr Vasanth Kumar and citation was read by Dr Ajay Deshpande, Arun Pawar, Mr Pandurang Sandbhor, Mr Krishnacharan, Mr Kunal Pathare, Dr K.P. Kale and others expressed their gratitude by appreciating the work and services of Mr Vasanth Kumar. He assured that he will continue to give his services to the Association and to the Poultry sector.

C. Vasnath Kumar being honoured by the newly elected president Sanjay Nalgirkar and the office bearers of PFBA - Maharashtra on November 16 at Pune

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Mr Vasanth Kumar welcomed the incoming President, **Mr Sanjay Nalgirkar,** Secretary, **Dr Ajay Deshpande** and Treasurer, **Mr K.V. Krishna Charan** and felicitated them with flower bouquets.

During the AGM held on November 16, the following members were elected as office bearers of Poultry Farmers & Breeders Association – Maharashtra.

1) President
– Mr Sanjay Nalgirkar

2) Vice President
– Mr Uddhav Ahire

3) Hon. Secretary
– Dr Ajay Deshpande

4) Treasurer
– Mr K.V. Krishna Charan

Executive Committee Members
1) Dr Syam Dhawan

2) Mr Kunal Pathare

3) Mr Vaibhav Pawar

4) Mr Dhananjay Babar

5) Mr Pandurang Sandbhor

6) Mr C. Vasanth Kumar (Former President)

7) Mr Rajendra T. Thorat

Invitees
1) Dr P.G. Pedgaonkar, GM, VHPL

2) Dr Yogesh Khatavkar, GM, Suguna Foods

3) Mr Krishna Gangurde

4) Mr Debaraj Das, COO, Baramati Agro Ltd

5) Mr Prasad Wagh, MD, Japfa Comfeed

6) Mr Nabhaji Kalbhor

The meeting held in Hotel Ramee Grand concluded with vote of thanks by Mr Pandurang Sandbhor and he thanked the President, Mr Vasanth Kumar, Fauna Remedies Inc. Sylon Group, Staff of Secretariat of Association and Anchor Pranali for their efforts and also all the members for attending the meeting. The chicken promotion activity will continue next year also.

National Chicken Day celebration by Association members at various chicken outlets

Infosys co-founder Narayana Murthy says death of 66 children in Gambia shamed India

Narayana Murthy said in his speech announcing the winners of the Infosys Science Prize that the IITs have become victims of the syndrome of rote learning due to the tyranny of coaching classes.

Underscoring the importance of research in the country, Infosys co-founder Narayana Murthy said that it was a matter of unimaginable shame that an India-made cough syrup was responsible for the deaths of 66 children in Gambia, and that it has dented the credibility of the country's pharmaceutical regulatory agency.

Murthy made the remarks while announcing the winners of the Infosys Science Prize at the Infosys Science Foundation in Bengaluru. Four cough syrups made by the Indian pharmaceutical company Maiden Pharmaceuticals have been linked to these deaths.

He added that research in the sciences is very important for a developing country like India that aspires to join the developed world.

"Research thrives in an environment of honor and respect for intellectuals, meritocracy, and the support and approbation they receive from the society. Therefore, recognising and rewarding the outstanding research efforts of Indian researchers is necessary... Scientific research is about curiosity, daring, healthy

skepticism, and questioning the status-quo," he said.

Even though two Indian companies produced the COVID vaccines that were administered to a billion Indians and many Indians have won prestigious awards and recognitions in the field of science and research, there are still many challenges, he said.

He also said that the Covid vaccines are based on technology or research from developed countries and that India hasn't developed a vaccine for dengue or chikungunya yet.

The Infosys founder, who is also a trustee of the Infosys Science Foundation, stated that there are two critical components for research success, and money isn't the most important one.

"The first component is to reorient our teaching in schools and colleges towards Socratic questioning and relating what they learn in the classroom to the real world around them rather than passing examinations by rote learning. Even our IITs have become victims of this syndrome, thanks to the tyranny of coaching classes," he said.

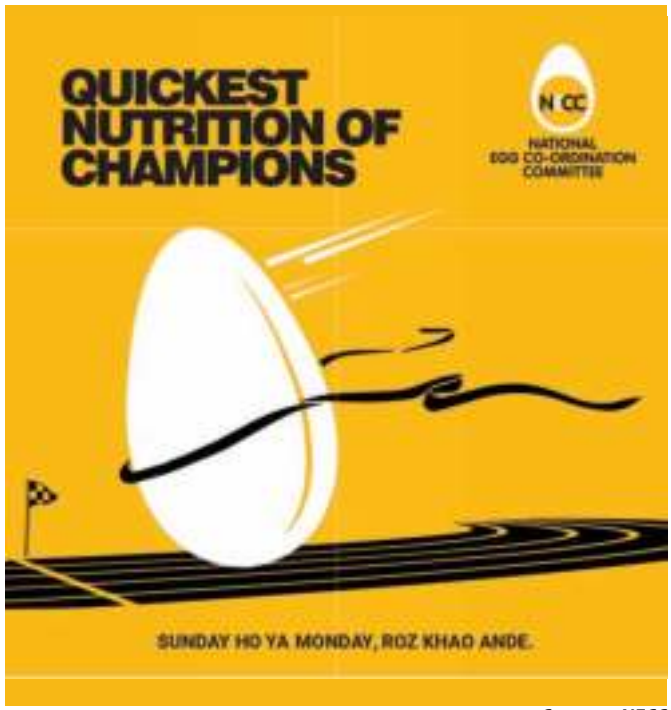
The second was for our researchers to concentrate on solving immediate problems, he said. "Such a mindset will inevitably lead to solving bigger challenges," he added.

Murthy also noted that there is not a single Indian institution of higher education in the top 250 of the World University rankings in 2022.

The Infosys Science Prize had six categories for contributions to science and research in India. The category winners will each get $100,000.

The winners of in the six categories include:

- **Mathematical Sciences:** Prof Mahesh Kakde of the Indian Institute of Science.
- **Physical Sciences:** Nissim Kanekar of the Tata Institute of Fundamental Research.
- **Social Sciences:** Rohini Pande of Yale University.
- **Humanities:** Sudhir Krishnaswamy of the National Law School of India University.
- **Life Sciences:** Vidita Vaidya of the Tata Institute of Fundamental Research.
- **Engineering and Computer Science:** Prof Suman Chakraborty of IIT Kharagpur.



Coutesy: NECC

Alltech opens Vietnam's first organic mineral production facility

The organic mineral facility, Alltech's 8th globally, was engineered to reduce environmental impact

Dong Nai, Vietnam: Alltech, a global leader in the agriculture industry, opened its newest Bioplex® plant on 2 November 2022, the first organic mineral production facility in Vietnam. The state-of-the-art manufacturing plant is Alltech's eighth mineral production facility worldwide. The plant's production capacity is 7,000 metric tons per year and it has the potential to create 100 new jobs, while being conveniently located to serve local customers and support import / export activity.

Alltech is one of the world's largest producers of organic minerals for animal nutrition. The company has committed significant resources into organic trace mineral production, quality control and research, as trace mineral nutrition is essential to animal health.

Alltech's Bioplex® range of minerals are supported by more than 21 years of research and offer higher bioavailability to animals than inorganic minerals. The minerals are readily absorbed, stored and utilized by the animal, supporting overall health, immune status and reproductive function. Furthermore, because Alltech's organic minerals are better utilized by animals, producers are able to achieve more with less. Mineral excretion from animals through manure is also reduced, resulting in less environmental impact.

Dr Mark Lyons, President and CEO of Alltech, at the opening of the new Bioplex plant, the first organic mineral production facility in Vietnam

"Our organic mineral program reflects our focus on sustainability in all aspects, from the health of the animal and the nutrition of the meat, milk and eggs produced to the economic well-being of the producer and the impact we have on our planet's land and water," said Dr. Mark Lyons, president and CEO of Alltech. "Our investment in enhancing our mineral production in Asia reflects our confidence in the market's continued growth and our alignment with our customers' commitment to better nutrition from farm to market."

Feed production in Vietnam increased nearly 7% in 2021, according to the Alltech Agri-Food Outlook, the company's annual global feed production survey. Vietnam's total feed production in 2021 was 18.5 million metric tons, led by the swine sector with 7.84 million metric tons, an increase of nearly 20% over 2020. Aqua feed production increased 40% in 2021 to 6 million metric tons, broiler feed increased 9% to 2.12 million metric tons, layers feed production increased 11.7% to 2 million metric tons and dairy increased 22% to 520,000 metric tons.

Consistent with Alltech's purpose of Working Together for a Planet of Plenty™, the production facility in Vietnam was engineered to reduce the environmental impact of production:

- The use of CNG versus fuel oil, a common fuel source in Vietnam, is expected to reduce the mineral plant's nitrogen dioxide emissions by 80% and carbon monoxide emissions by 87.5%.
- The facility uses high-pressure clean-in-place (CIP) pumps for tank cleaning, reducing wastewater by 50%.Its dust collection system is 99% efficient.
- The use of invertor motors saves electricity consumption by 5% by utilizing variable frequency drive (VFD), which also allows for the control of speed and torque to reduce chances of mechanical failures.
- The production system uses fluid bed drying (FBD) technology, which requires 48% less thermal consumption than conventional spray dryers.
- The facility is certified by ISO 22000:2018, which sets out the requirements for a food safety management system.
- Organic trace minerals are more bio available to the animal, contributing to improved animal health. Because more of the minerals are

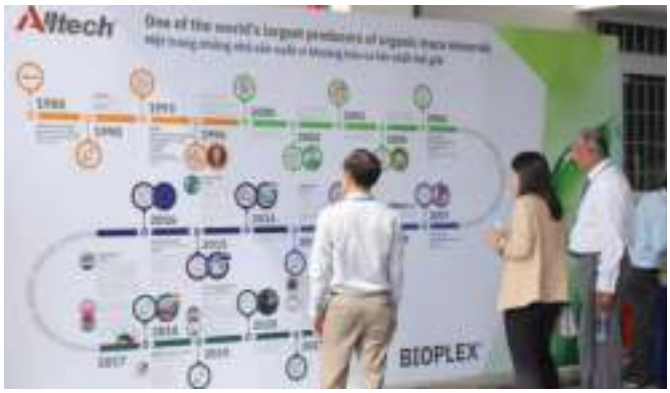
Vietnam new plant

Alltech opens Vietnam's first organic mineral production facility. *Left to right:* ***Lai Xuan Sam, Deputy Director, Sonadezi; Dr Mark Lyons, President and CEO, Alltech; Duong Tat Thang, General Director of the Livestock Production Department, Ministry of Agriculture and Rural Development; Jonathan Wilson, President, Alltech Asia Pacific and Keith Gribbins, Director of Operations, Alltech Asia Pacific.***

taken up by the animal, mineral excretion through manure is reduced, minimizing environmental impact on land and water.

The new facility also utilizes the Alltech Q+ (Quality Plus) Program, a mineral quality control program unique to Bioplex trace minerals that guarantees quality, safety and performance in every batch. Alltech Q+ sets the industry standard, enabling Alltech to offer a global quality guarantee to customers using Bioplex trace minerals around the world. It forms an integral part of the Alltech Quality System (AQS), which was designed to meet or exceed all global market regulatory standards and ensures that proper approvals and analyses are performed for suppliers, raw materials and finished goods.

For more information about Bioplexand the Alltech Mineral Management program, visit alltech.com/mineral-management.



A view of participants

India likely to import 64 pc less soyabean; nil soyabean meal in 2022-23: SOPA

India's soyabean import is pegged lower by 64 per cent at 2 lakh tonnes in the 2022-23 season on prospects of higher domestic production, industry body SOPA said on November 16.

India's soyabean import is pegged lower by 64 per cent at 2 lakh tonnes in the 2022-23 season on prospects of higher domestic production, industry body SOPA said on 16 November 2022. The country had imported 5.55 lakh tonnes of soyabean during the 2021-22 season (October-September), it said.

According to the Soybean Processors Association of India (SOPA), the domestic production of soyabean is estimated to increase to 120.40 lakh tonnes in the 2022-23 season when compared with 118.89 lakh tonnes last season.

Even the carry-over stock remains higher at 25.15 lakh tonnes as against 1.83 lakh tonnes in the previous year. The total availability of soyabean is estimated at 147.55 lakh tonnes this season, higher than 126.27 lakh tonnes in the previous season, the industry body said in a statement.

Out of the total soyabean, about 100 lakh tonnes would be available for crushing this season as against 84 lakh tonnes in the previous 2021-22 season.

About 13 lakh tonnes are estimated to be retained for sowing, 4 lakh tonnes for direct consumption and about 1 lakh tonnes for export in the current season, it added.

As on November 1, 124.05 lakh tonnes of soyabean stock was with farmers, traders and plants.

In case of soyabean meal (used as animal feed), the country's import pegged at zero this season from 6.45 lakh tonnes in the 2021-22 season, while exports are expected to increase to 82 lakh tonnes as against 73 lakh tonnes in the said period.

Total soyabean meal production is pegged higher at 79.82 lakh tonnes during the 2022-23 season, as against 67.05 lakh tonnes in the previous season, SOPA added.

Alltech India hosts Poultry School in Karnal, Haryana

The Alltech India team recently organized a Poultry School in Karnal, Haryana on 19 November 2022 to share the latest studies, innovative solutions and best feed milling practices with its poultry customers. The event was a great success, with 70 major poultry producers, feed millers and market leaders actively participating.

Dr Nick Adams, Alltech's Global Director presenting on Mycotoxins- Myths and Facts

Dr Nick Adams, Alltech's Global Director of Mycotoxin Management, presented on 'Mycotoxins- Facts and Mitigation'discussing on managing mycotoxins in the feed chain. He asked attendees to think twice about clean feed, speaking about the importance of gut health, grain quality and highlighting the ways that Alltech 37+ mycotoxin analysis and Alltech RAPIREAD can mitigate the negative effects of mycotoxins.

Dr Lokesh Gupta, Senior Regional Technical Manager - Poultry (South Asia) addressing the gathering on benefits of enzymes

The renowned nutritionist, Dr Pradeep Mahajan captured the audience's attention with his presentation, 'Feed Ingredients: Quality and Processing'. He shared insights on different raw materials, their selection criteria, nutrient composition, extraction process and best feed milling practices.

In the final session, Dr Lokesh Gupta, Senior Regional Technical Manager - Poultry (South Asia) discussed on 'Maximizing nutrient digestibility and profit'. He presented the history of Alltech enzymes and shared the uniqueness of solid-state fermentation technology and its benefits in maximizing feed efficiency with greater savings.

Dr Pradeep Mahajan highlighting the importance of raw material quality

The gathering also witnessed a special moment, as Alltech team along with Dr Sayed Aman, Managing Director of India and Regional Director of South Asia for Alltech, launched the company's newest product in the enzyme category, Allzyme Prime, a unique multi-enzyme complex.

A view of participants

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Alltech Feed Manufacturer's Forum highlights feed quality optimization and mycotoxin mitigation

A view of participants

Bangalore: Animal feed includes various raw, processed and semi-processed products that are fed to livestock and poultry. However, the quality of the raw materials being used is a rising concern due to several factors disrupting feed production. It is every producer's responsibility to pay attention to ingredient quality not only to meet the nutrient requirements of the animals but also to keep costs low. Good quality feed production demands optimum utilization of materials, machinery, people and procedures.

In response to these challenges, Alltech hosted the Feed Manufacturer's Forum in Ludhiana, on 17 November 2022 to discuss feed quality optimization and mycotoxin mitigation.

About 65 eminent poultry, dairy feed millers, consultants and farmers attended the session upon invitation and enjoyed the programme making it a great success.

Dr Nick Adams, Alltech's Global Director of Mycotoxin Management, discussed managing mycotoxins in the feed chain in his presentation, 'Mycotoxins-Facts and Mitigation'. He asked attendees to think twice about clean feed, speaking about the importance of gut health, grain quality and highlighting the ways that Alltech 37+mycotoxin analysis and Alltech RAPIREAD can mitigate the negative effects of mycotoxins.

The renowned nutritionist Dr. Pradeep Mahajan captured the audience's attention with his presentation,'Feed Ingredients: Quality andProcessing'.He shared insights on different raw materials, their selection criteria, nutrient composition, extraction process and best feed milling practices, answering to several queries of the audience.

In the final session, Dr Lokesh Gupta, Senior Regional Technical Manager - Poultry (South Asia) presented on "Maximising nutrient digestibility and profit". He discussed the history of Alltech enzymes and shared the uniqueness of solid-state fermentation technology and its benefits in maximizing feed efficiency with greater savings.

The gathering also witnessed a special moment, as Alltech team along with Dr Sayed Aman, Managing Director of India and Regional Director of South Asia for Alltech, launched the company's newest product in the enzyme category, AllzymePrime, a unique multi-enzyme complex.

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The World Cup ate my egg: Rising demand from the Gulf cheers Indian poultry farmers

Rising demand from the Gulf region has doubled the country's egg exports, as also driven up domestic prices. This is good for the poultry farmers, who have been facing losses since the pandemic.

FIFA World Cup 2022: Qatar is the first World Cup host in the Middle East

The FIFA World Cup 2022 in Qatar has given a fillip to egg exports from the country as the Gulf nations have increasingly turned to India to bridge the widening gap between supply and demand.

Ukraine and Turkey are the major egg exporters to the Gulf countries, while India is a minor player. Since the start of the war with Russia, the supply from Ukraine has dwindled, presenting India with an opportunity to fill the gap.

Apart from the usual demand, the forthcoming football fiesta is expected to drive the consumption further as people from all over the world will converge on Qatar. Along with Oman and UAE, Qatar too has become a big importer of Indian eggs.

The shortage has also raised the prices of eggs from Turkey. "Eggs from Turkey are selling at $36-37 per carton of 360 eggs. Our rates hover around $30-31," said K Singaraj, President, All India Poultry Products Exporters Association.

A major chunk of egg exports from India is from Namakkal in Tamil Nadu, which is the hub of egg production in the country. Namakkal produces around 4.5 crore eggs a day. The total production in the country is calculated to be around 30 crore eggs a day.

Egg export to the Gulf countries from India was thriving till about 5-6 years ago. After successive bird flus in several states and the outbreak of Covid, the shipments slumped. Exports had recovered to some extent early this year, and had reached about 3 crore eggs a month.

"Rising demand from the Gulf region has doubled the country's egg exports, which is good for poultry farmers, who have been facing losses since the pandemic," Singaraj said.

Local egg prices have seldom kept pace with rising production costs in recent times, which has hit the poultry farmers. "The production cost has increased from Rs 4.50 per egg to Rs 4.75. Unless they get a price of at least Rs 5 throughout the year, it is not viable for the farmers," said K G Anand, head of Venkateshwara Hatcheries in Andhra Pradesh, a major egg producing state.

Currently, retail prices range between Rs 5.50-7.00 per egg in different parts of the country, which is profitable for the poultry farmers. But we do not see this throughout the year. If you take the annual average, it will be below the cost of production," Anand said. Rise in feed prices is the principal factor behind rising production costs. Poultry feed has become expensive with prices of key ingredients like maize and soybean ruling high.

Typically, egg consumption goes up during the winter months, particularly in the northern states. But now, a significant chunk of Namakkal's produce goes towards meeting rising export demand. Will this not raise the price of eggs further ?

"No, prices will be maintained at the current level because the higher demand in north India is offset by the drop in consumption in the southern states due to the Sabarimala temple pilgrimage season," Singaraj said,Kerala buys nearly half the eggs produced in Namakkal. With the higher demand for Namakkal eggs, egg prices in Kerala have shot up. "From Rs 4.50 an egg a month ago, it has reached Rs 5.70 now. This is likely to persist for some weeks as it is not easy to ramp up production at short notice, '' said C J George, President, Kerala Egg Dealers Association.

Tara Enterprises organises its Field Officials' Family Get-Together in Hyderabad

Hyderabad: Tara Enterprises (the largest Veterinary Distribution House in India) had their Telangana Field Officials' Family Get Together on 16th October 2022 at Novotel Hotel, Hyderabad Airport, Hyderabad. The event started at 10.30 am with Ganesh Vandana and Lamp Lighting by Mr D.S. Subramaniam's family members including his mother, wife, uncle and aunts. In his welcome address Mr D.S. Subramaniam explained 27

Dr V. Ashok Kumar, Commercial Manager, South East Asia and South Asia, IDEXX Laboratories Pvt Ltd.

years of his Tara Group's journey with many ups and downs continuing till date and also his 42 years long journey in Animal Health Sector of India. His golden statement was **"HAVING COMPLETED 42 YEARS OF SERVICE IN ANIMAL HEALTH INDUSTRY, I AM STILL NOT TIRED"**. Other prominent and distinguished guests were Mr T. Natesan, Managing Director, Virbac India, Dr V. K. Shankar, CEO, Globion, Dr Ashok Kumar, Commercial Manager,

T. Natesan, Managing Director, Virbac Animal Health India Pvt Ltd

South East Asia and South Asia, IDEXX Labs, Dr Pankaj Lohan, Vice President, Vvaan, Mr Sudhir Kumar Malhotra, Managing Director, Interface, Mr Sharath Babu, Additional Commissioner of Police (Retired), Hyderabad, Mr Davinder Singh Dhanjal (Dolly) - Mr Subramaniam's college mate from Ladakh, Mr Surender Nagpal – Mr Subramaniam's classmate from Delhi.

Mr T. Natesan, Managing Director, Virbac in his speech mentioned how he was inspired by Mr Subramaniam in the year 1988 while working in the field in Namakkal area. Mr Subramaniam was the Area Manager those days for Glaxo Animal Health for the states of Tamil Nadu and Kerala. Mr Natesan, those days used to work as a Poultry Feed Representative for Deejay Feeds at Namakkal. One day in the year 1988 when Mr Natesan coincidentally saw Mr Subramaniam and his local Namakkal colleague at a stockist's place, he, then and there itself decided that he will make his career in Veterinary Pharmaceutical Industry only. He got a chance into the Glaxo Animal Health as a Veterinary Sales Representative which at a later date went on becoming Virbac Animal Health. Mr Natesan now is the Managing Director of Virbac Animal Health, India which has got a turnover

Dr V. K. Shankar, Chief Executive Officer, Globion India Pvt Ltd

of above Rs 1000 crores and a staff strength of above 1200 people in India. Before becoming Managing Director of India T. Natesan worked in various capacities for 20 years in Glaxo / Virbac in South East Asia, Taiwan and Korea. His abroad assignments were almost for nine and a half years.

Dr V.K. Shankar, CEO, Globion India Pvt Ltd (100% subsidiary of Suguna Holdings Pvt Ltd) in his address specifically touched hard work and

D.S. Subramaniam giving welcome speech

integrity of Field Officials. He emphasized that all the field officials with their sheer hard work and integrity will be definitely successful in life. He explained about his tenure

with big multinationals like Pfizer, Bayer etc. Also, he discussed his Bayer, Germany tenure with regard to his launching Novel immunostimulants for chicken and beef cattle for US market and how he led the registration for clinical trials in various markets across the globe specially in Asia, Latin America, South Africa and Sub Saharan Africa.

Dr V. Ashok Kumar, Regional Commercial Manager, South East Asia and South Asia, IDEXX Laboratoies Pvt Ltd, explained how he used to work in deep interior districts of Telangana on scooter while he was a medical representative of Sarabhai Chemicals. He clearly said that there is no substitute for field work. He remembered having met Mr Subramaniam many times as a representative in early 1980s in Telangana districts. He said that he knows Mr Subramaniam for 40 years now. He also gave lot of emphasis on field work and integrity. All the Field officials were present in the event from morning

D.S. Subramaniam's Mother, Smt. Lalitha Garu Lighting the Lamp

till evening along with their wives and children.

The gist of most of the speakers was that the erstwhile representatives of respective companies had better growth prospects leading them into managerial positions. This was due to their honesty, sincerity, hard work and dedication towards their profession. However, they expressed their pain and agony towards today's scenario that presently some of them are running parallel business in the names of their relatives which is very harmful to Veterinary Industry. They have hence advised to curb such unethical practices and stay loyal to their companies and grow within their company respectfully.

It was a nonstop entertainment for more than 12 hours including classical dances, Tambola Games, Magic Shows, Virtual Games, Mehendi, Bangles for ladies, lot of songs (film songs) and dances by children, ladies and one and all. The special attraction was the photo booth wherein every family was given two photo frames, one for the wife and husband and the other one for their family members. Every family carried these photo frames back to their homes. All the attendees carried back with many gifts. In the evening it was an excellent cocktail and dinner with a musical event for the male members and every one enjoyed the party with total satisfaction. Finally, this wonderful event was ended with gaiety and it was like a big Diwali Carnival and the entire credit goes to Mr D.S. Subramaniam and his five members team namely Vasantha Lakshmi, Vijaya Durga, Chandrasekhar, Nagesh and Suresh Kumar.

Interviews with Wives of Field Managers In Tara Group

Mrs Anitha, W/o Mr Somesh

"I am Anitha, W/o: Mr Somesh who is presently working as a Manager in a Canadian Company by name Atomes. My husband who is a BSc., MBA graduate from Thorur, Warangal District started his career with Reddy Labs and then he joined in Poultry Field in the year 2012 and worked in Virbac and Intas. My husband is in this field for the last ten years and we had participated in a function when he was awarded a superstar award in Jaipur when he was working in Virbac four years back. After that event this Tara Group event is the most memorable we have ever come across.

The speeches of the Managing Directors of various companies during the event were very motivating and inspiring for the people like my husband who are in the first step of their careers. The get together also has made us meet other families who had participated in the event and get to know each other and had good interactions. This interaction with other families also helped me to plan about the future of my kids Chetan Shiva and Himanshu who are 4 years and 2 years of age .This

Glimpse of Tara Group get – together

D.S. Subramaniam with his family members

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get together of Tara Group also made me feel and realize that there are many families around me in the same field and who can be of moral support to us at any point of time in my life and we are not alone"

Mrs Shaik Anjuman Begum, W/o Mr Rafee

" I am Shaik Anjuman Begum. Dr Aseef in Chittoor Poultry Consultancy had observed the alertness and smartness of my husband Mr Rafee and made him join in this field as Representative in IBC company in the year 2000. He worked there for six years and then joined in Pfizer based of Vijayawada HQ. He was there till 2012 and then joined in Fort Dodge as Manager in the year 2013. He was transferred to Hyderabad in the year 2014 and worked till 2018. Now he is working as Client Manager in Cargill since four years .We got married in the year 2004, 11th July and are residing in Pragathi Nagar, Hyderabad.

In the middle of his career he got transferred to Chattisgarh and again came back to Hyderabad. I attended this Tara Group get together in Novotel along with my husband and children Jabin and Riyan. The whole day went on cheerfully and me and my children felt so happy spending the day like that. We came to know about the life of Tara Group Managing Director Mr Subramaniam. With his great achievement in establishing the Tara Group, he has been a role model and a guiding mentor for so many of his employees and also his company field officials. Subramaniam Sir is a very humble human being and I remember him accepting our invitation for our Gruhapravesam and blessing us by his presence during the occasion inspite of his busy schedule"

Mrs Swapna, W/o Mr Viswanath Reddy

" I am Swapna wife of Viswanath Reddy, Sales Manager, DSM Nutritional. These type of events give morale boost to our children's future. My husband is the nephew of a well known Poultry Farmer, Mr Poornachandra Reddy. He has done BCA and MBA. I have done B.Sc, MSc and Ph.D and I am working as Professor (Chemistry) in Keshav Memorial College, Narayana Guda. I feel proud along with my two sons Pawan studying 9th class and Madhav studying in 4th class of being part of Tara Family participated in the Event at Novotel on 16th October 2022. We all the family members participated in the get together with a lot of enthusiasm and happiness. It was very well organized event which we have never attended earlier.

27 years of hard and turbulent business experience of Tara Group's Managing Director, Mr Subramaniam sets an example for the future generation of all the children who wants to take up business as their profession. My both sons liked Mr Subramaniam inviting his childhood college mates from Ladakh and Delhi. They were astonished to see Mr Subramaniam still continuing college days friendship even after forty two years. Post pandemic this is the first big event we have attended and our family felt great like a big wonderful holiday trip. The speeches of Managing Directors motivated all house wives, working wives and children in the right direction.

The hospitality rendered by entire Tara Group team including the quality of the food, varieties of the snacks, classical dances, games like Tambola, virtual games, magic show, mehendi, bangles shop, photo booth, evening entertainment showed the group of more than 200 people as to how professionally Tara Group has arranged such a big event for more than twelve hours nonstop"

Left to Right: ***Dr Elango, Commercial Manager-India , IDEXX Lab; Dr Ashok Kumar, Commercial Manager, South East Asia and South Asia, IDEXX Lab; Sudhir Malhotra, Managing Director, Interface; Yogesh Garg, Vice President, Virbac; T. Natesan, Managing Director, Virbac; D.S. Subramaniam; Mrs D.S. Subramaniam; Mrs Dr V. K. Shankar; Dr V. K. Shankar, CEO, Globion and Pankaj Lohan, Vice President, Vvaan***

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Mrs Renuka, W/o Mr Apparao

"I am Renuka, W/o: Mr Appa Rao, Divisional Sales Manager, Zenex (formerly Zydus Animal Health). I am B.Sc. in Computer Science and MBA but enjoying my life as a house wife. My first and foremost feeling about Tara Group is "Tara Group is not a simple business group. It is not one Organisation but a big Institution. I have been attending Tara group get together events since 2012 ie for the last ten years, the first one being in Shelton Hotel Rajahmundry, next- Leonia Resorts, Hyderabad, Alankrita Resorts Hyderabad and Taj Gateway Hotel, Vijayawada and now this mega event in Novotel, Hyderabad Airport .

Myself, my daughter, Utkarsha, my Son Nayan and my younger sister, Vanaja never thought the event will be so amazing. It was simply a twelve hours of nonstop entertainment for all the seventy families. It was a wonderful experience for house wives like me. The speeches of all big Managing Directors motivated many of us and we came to know the hard work and challenges behind their successful career. We came across friends with all the other field official families. Mr Subramaniam has started this Tara Group in the name of his sister who passed away 27 years back which shows the bonding in families.

Starting as a medical Representative and reaching to a successful businessman with crores turnover with his hard work and dedication is commendable. He not only grows alone but he makes his associates grow along with him. We are very proud to be associated with Tara Group and pray Almighty to bless the Managing Director and his entire family with an excellent health and prosperity"

Mrs E. Kavita , W/o Mr Srinivas

"Thanks and gratitudes. My husband Mr Srinivas is Regional Sales Manager for Globion (a Suguna group company). My husband has done B.Sc (Poultry) from Warangal College and got into Suguna Broiler Integration through campus selection. From there he shifted into Globion vaccines. Tara groups Telangana field official family get together immensely impressed me and my entire family. I personally feel that such type of great events at least once in a two or three years will motivate me, my husband and my children. My Son, Sathvik who is in his third year of Engineering felt as if it was like his Engineering College's Annual Festival. Managing Directors from big Companies speeches about team work, discipline, talent, European and American style of working have impressed me and my family.

D.S. Subramaniam in 1990 as Glaxo Animal Health Manager along with the other Glaxo Managers

The get together of all the field officials along with family together participating – mehendi, Bangles and photo booth for all the participants especially ladies was really wonderful. From morning 10.30 am till night 10.30 pm the time went on so fast interestingly like in a dream. I liked the most success story of Mr Natesan, Managing Director, Virbac from a Representative to a Managing Director crossing so many hurdles with his sheer hard work and integrity. Even though I do not understand English thoroughly still Mr Natesan's expressions made me very attentive towards his speech.

We wholeheartedly thank team Tara for felicitating our entire family with gifts, games, entertainment throughout the day and giving us one of the best experiences of our life"

Mrs Sandhya, W/o Mr Tirumal Reddy

" My husband Mr Tirumal Reddy is working for Globion (a Suguna Group of Company). I am M.Sc and later B.Ed., Graduate

Tara Group's Telangana Field Officials Family Get together at Novotel Hotel, Hyderabad Airport along with other Glaxo Managers

and appeared for the DSC examination of Telangana Government and expecting to join as teacher in the Government School. There are many so many Poultry medical Distributors in Telangana and Andhra Pradesh but, I have never seen any other Distributor conducting such large scale field officials family get together other than Tara Group, Hats off to Team Tara !!!

Myself and my both daughters felt very elated for having met so many field officials families and children wherein we had exchanged our views, learnt many things from them throughout the day. Entertainments for all age groups were wonderful and attractive especially children enjoyed dance , songs , virtual game and competitive activities etc. We felt so lucky when our elder daughter won a prize in one competitive activity. We got to learn many things from others who participated in the event and I also won a prize in Tambola which made our family very happy.

After listening to the great speeches of many company heads wherein they clearly explained their own growth within the company, gave many of the ladies and their grown up children lot of confidence on our husband's future in this industry. I am very much thankful to Tara Group for arranging such an eventful and meaningful event"

Mrs Lakshmi, W/o Mr Manikyala Rao

"I am Lakshmi W/o Mr Manikyala Rao working as Manager in Hipra India. Earlier he worked in Virbac. I attended the event along with my husband and children. After our marriage in the year 2006 the events organized by Tara Group were the best happiest moments where we enjoyed with our family in Vijayawada and Hyderabad. Virbac (Ex Company) and Hipra Companies supported my husband with good salary and a quality life. With association of Tara group the companies are able to reach out to remote farmers.

We are leading a happy life today after coming from a remote village in West Godavari District and Tara Group plays an important role in our happy life. The Managing Director of Tara Group, Mr Subramaniam with his dedication and efficient management along with his employees as organizers has arranged this get together of 40 to 50 families in a grand way. My kids (both girls) who are in 10th class and 3rd class enjoyed the ice cream, cakes, games, dance, songs etc during the event. My husband is always being supported by the Tara Group in his official work. Mr Subramaniam is like our family and his blessings to our family means a lot to us. We are very thankful for being associated with Tara Group"

Mrs Jyoti, W/o Mr Ramana Rao

"I am Jyoti wife of Mr Ramana Rao working as Senior Sales Manager in Indian Herbs . I am a practicing Advocate. The programme of Tara Field Officials Family at Novotel Hotel, Hyderabad Airport, Hyderabad on 16th October 2022 was very interesting throughout from morning 10.00 am till night 10.00 pm. The food snacks and Hospitality was excellent. Even Bala Madam wife of Mr Subramaniam moves closely with all of us without any parity inspite of being the owner of such big business.

The whole day was filled with full entertainment. Children as well as elders were very much happy and enjoyed the day. After this get together we felt we should spend time like this with our family once in a month. I have two daughters and my elder one is Dr Thanvika and got married and settled in Boston as Dentist. My second daughter Ms Sathvika has completed her B.Tech and working in a media now. My husband Mr Ramana Rao also has Poultry background as his father was running a Poultry Farm in Chitanyapuri in those days and their family got settled in Hayathnagar in the year 1994. We are very thankful for being associated with Tara Group and are totally impressed with their discipline, devotion and dedication towards their work".

PHYTASE
A Practical and Rational Application in Broiler Rations

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It is a well-known fact that feed accounts for 65 to 70% of total input costs in Poultry farming. Hence, it goes without saying that optimizing Poultry diets with the objective of precision nutrition and taking advantage of the latest updates in formulation technology can only lead to better technical performance with reducing feed costs.

> *Phytase is considered the most cost-effective and efficacious additive that we have at our disposal.*
> – Dr Nataraja HB

The application of enzymes in Poultry has been a major game changer in the last two decades and is continuously updated every now and then. Among exogenous enzymes used in poultry diets, Phytase has been universally accepted as a versatile enzyme by releasing available Phosphorus from the ingredients of vegetable origin. As the majority of Phosphorus is inbound farms (almost 2/3rd), this helps in saving a significant amount of feed costs and reducing the use of inorganic phosphates in the diets. The use of Phytase also has also beneficial effect in terms of sustainable production by reducing Phosphorus excretion in the litter.

Phytase is considered the most cost-effective and efficacious additive that we have at our disposal. It has become a common ingredient in broiler and layer diets for the last 20 years although it has been on the market since late 1990. Our understanding and application of Phytase have improved over the last few years. Till recently, Phytase benefits were attributed to its direct effect i.e., degradation of Phytate P which is abundantly present in the cell wall of plant ingredients neglecting the other extra benefits –the "Extra Phosphoric" effect of Phytase. We can now see it has been used rationally by the majority of producers and getting maximum benefits in terms of savings as well as improved performance.

Phytase is a unique enzyme which involves in the breakdown of mineral salt (Phytate P) rather than organic compounds unlike other NSP enzymes, Protease etc. The commercial Phytases are classed as 'Histidine Acid Phosphatases' which have a broad spectrum of activity. They are very active at the Ph of 3 to 5 (acidic pH) whereas the NSP & Protease are active at Neutral Ph and since Phytase is active before any other enzymes and it becomes the starting point before considering any multiple enzymes and probably due to this many nutritionists consider Phytase as predominant enzyme when considering the enzymes for formulation. The efficacy of phytases depends upon how fast they can degrade Phytic acid before coming across a higher pH environment where they are almost inert in their activity.

There are mainly 2 types of Phytases based on the source and site of action.

1. 3-Phytases
2. 6-Phytases

3-Phytases are the first ones to be introduced in the market and are mainly from Fungal sources (*Aspergillus* source based) and **6-Phytases** from Bacterial origin (*E.coli* source based) were later introduced and they slowly replaced 3-phytases as they were more efficient in degrading Phytic Phosphorus. We are seeing continuous advancement rather than the evolution of Phytase since then. The present generation Phytases are 3rd generation phytases that have been further genetically modified and are very robust acting, stable, and can withstand extreme conditions of feed processing with better thermostability.

Maximizing the efficacy of Phytase

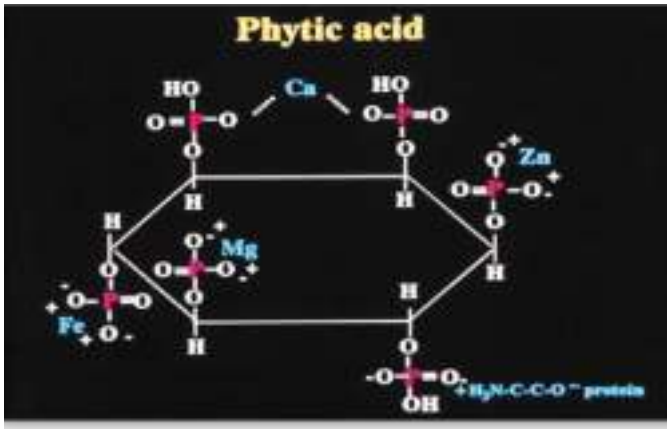
As we know, to increase the efficacy of any enzyme we need to understand the substrate upon which the enzyme is going to act upon, and in the case of Phytase it is the Phytic

Phosphorus also termed Inositol Phosphorus (Myo-inositol hexaphosphate -IP6). It contains 6 Phosphorus molecules at different positions forming a hexagonal ring. Based on the site of activity Phytase are classed as 3-Phytases/6-Phytases.

The phytate content of Ingredients varies significantly and it ranges from 60 to 85% of total P especially byproducts of cereals such as Rice bran and De-oiled rice bran are rich in Phytate P and serves as an ideal substrate for Phytase Vegetative feed ingredients contain 65-80% of total P as Phytate P and serves as an ideal substrate for Phytaseand this is highly anti-nutritional in nature. Phytates are highly irritant in GIT resulting in significant endogenous losses of nutrients in the form of mucin and also a potent inhibitor of main enzymes -Pepsin and Pancreatic enzymes.

It is also a strong chelator of cations such as Zn, Fe, Mn, Ca & Mg and can also chelate with Vit B_3(Niacin) and some of the amino acids such as Arginine and Lysine(basic AA). All these anti-nutritional effects of Phytate pave the way for the Phytase enzyme to exercise numerous beneficial effects.

Below image shows phytic acid structural bindings of Cations and Amino acids to have anti-nutritional impact



Phytate P content of common feed ingredients used in Poultry

Ingredients	Phytate P(%)	Total P(%)	% Of total P
Maize	0.17	0.22	77
Brokenrice	0.11	0.19	58
Wheat	0.19	0.29	65
Bajra	0.17	0.21	81
DDGS	0.16	0.66	24
Full fat soya	0.27	0.45	60
Rice bran(polish)	1.23	1.44	85
De-oiled rice bran	1.68	1.99	84
Soya bean DOC	0.29	0.49	59
Rape seed meal	0.52	0.86	60
Maize gluten 60%	0.36	0.44	82
Sunflower meal	0.85	1.00	85
Ground Nut meal	0.34	0.56	61
MBM	0	6.00	0
Fish meal	0	2.65	0

Optimum Application of Phytase:

Phytase efficacy depends upon

1. Source of Phytase
2. Phytate content of the diet-Substrate level
3. Level of Ca and source of Ca
4. Dosage & application.
5. Feed processing conditions

Source of Phytase:

The present 3rd Generation 6-Phytases are more efficacious than the old generation 3-Phytases(fungal origin) as they can act at varied levels of pH, fast acting, stable at varied pH and are thermostable in nature. They are less pH sensitive, are aggressive Phytate removers and have capacity of removing majority of Phosphorus. They can be twice efficacious than 3-phytase which at single dose (500 FTU/kg) which can degrade 35-40% of Phytate P whereas 6-phytase can degrade up to 70% of Phytate P.

Phytate content of the diet:

It will be a better practice to consider Phytate P levels in the diets and to consider scope of Phytase activity. The Phytate values to be applied to ingredients and to check the levels while formulating the diets will be first step in rational use of Phytase. As we all know, Phytate P is abundantly present in raw materials from plant origin, the Phytate P will be in the range of 0.22% to 0.28% in normal maize soya diets and it can drop up to < 0.2% when animal protein sources such as MBM, Fish meal etc. are used. In those cases, one need to be careful about considering the Available Phosphorus release as Phytase efficiency cannot be more than 70 to 75% considering practical conditions and variations at feed mill and farm level. Many research trials have concluded Phytase efficacy was significantly higher in maize-based diets compared to other grains and they were more responsive in terms of broiler performance-Weight gain, Feed intake and FCR.

Level of Calcium and source of Calcium: As Ca and P metabolism is interlinked, the Phytase efficacy depends upon dietary Calcium, Total P, and Phytate P levels. Higher dietary Ca levels have a negative effect on phytase efficacy as Phytic acid is a strong chelator of Calcium, higher plasma concentrations of Ca will lead to the formation of insoluble

salts of Calcium Phytate which are refractory to phytase activity and phytase efficacy will be affected negatively. Hence, it goes without saying - Ca in Broiler diets need to be regulated and we need to ensure there is no excess calcium which can happen through weighing errors of limestone in feed mill or using the former as a carrier of premixes and additives. Nutritionists/formulators need to be careful while formulating diets and it is better to consider Ca matrix values for Trace minerals, Vitamin premixes, and other additives. Minimum and maximum constraints need to be applied for Calcium while formulating.

The source of Calcium also has an effect on Phytase efficacy as a more soluble source from limestone powder has a negative effect as it tends to increase the pH reducing the phytase activity. Many research trials have found that feeding less soluble Calcium sources (larger particle size) improves the phytase activity as it has less effect on pH which favors phytase activity.

Dosage and application:

The earlier dosage of Phytase when introduced in the market was 500ftu/kg of feed which is also referred to as a single dose and mainly Phosphorus matrix was considered and release of 0.10%. Available Phosphorus which equates to 5-6 kg of Dicalcium Phosphate but now a dosage of 1000 FTU/kg of feed(Double dose) is commonly followed and release of 0.16 to 0.18% of Available Phosphorus which can replace up to 10kg of DCP. At present, the concept of Super dosing /Supra dosing has been advocated in which 2000 FTU/kg of feed which requires 400g of Phytase(5000 FTU/g) to bring de-phytinase effect which breakdown almost 100% of Phytate P in the ration to have other benefits which improve performance by overcoming the negative effects of Phytate. The other benefits include reduced mucin production, improved AA digestibility, and improvement of Net Energy as a result of improved Net Energy(Productive Energy) indirectly by better Gut health. The beneficial sparing effect is attributed mainly to overcoming negative effects of Phytate in terms of gastric irritation-in turn excess Mucin production.

Feed Processing conditions:

The use of pellet feeding to broilers has become a common practice in the last few years and their advantages of improved voluntary feed intake and early weight gains are well known. However, the selection of Phytase has to be done carefully based on thermostability and recovery after pelleting for the enzyme activity. Also, the form of Phytase offered also as a homogeneous distribution of enzymes is a must for better enzyme activity and broiler performance. Phytase as a part of premix can overcome major problems of poor mixability issues. At present, we have the advantage of using 3rd new generation phytases which are intrinsically thermostable, and better activity levels are observed even after pelleting the feeds.

Application and Benefits of Phytase in Broiler diets:

- Using double dose of Phytase (1000 FTU/Kg of feed) is considered as the most cost-effective dosage as observed by nutritionists.
- Can Release 0.17 to 0.18% Av P without any doubt in vegetarian based diets and exercise caution whenever animal proteins are used.
- As Phytate is a strong chelator of Calcium, significant amounts calcium is also released along with Phosphorus almost to the tune of Phosphorus levels-up to 0.2%.This needs to be considered critically while formulating the broiler rations.
- Zinc will be available up to 20 ppm.
- Potassium is available by 0.04%.
- Sparing effect on sodium by improving the availability and reducing the secretion of $NaHCO_3$ and it will be more available by 0.03%.
- AA acid availability increased by 2-4% due to reduced mucin production and reduced endogenous losses and practical Energy increment of 50kcal/kg can be considered although some trials had shown improvement of ME by 86kcal/kg.

Conclusions:

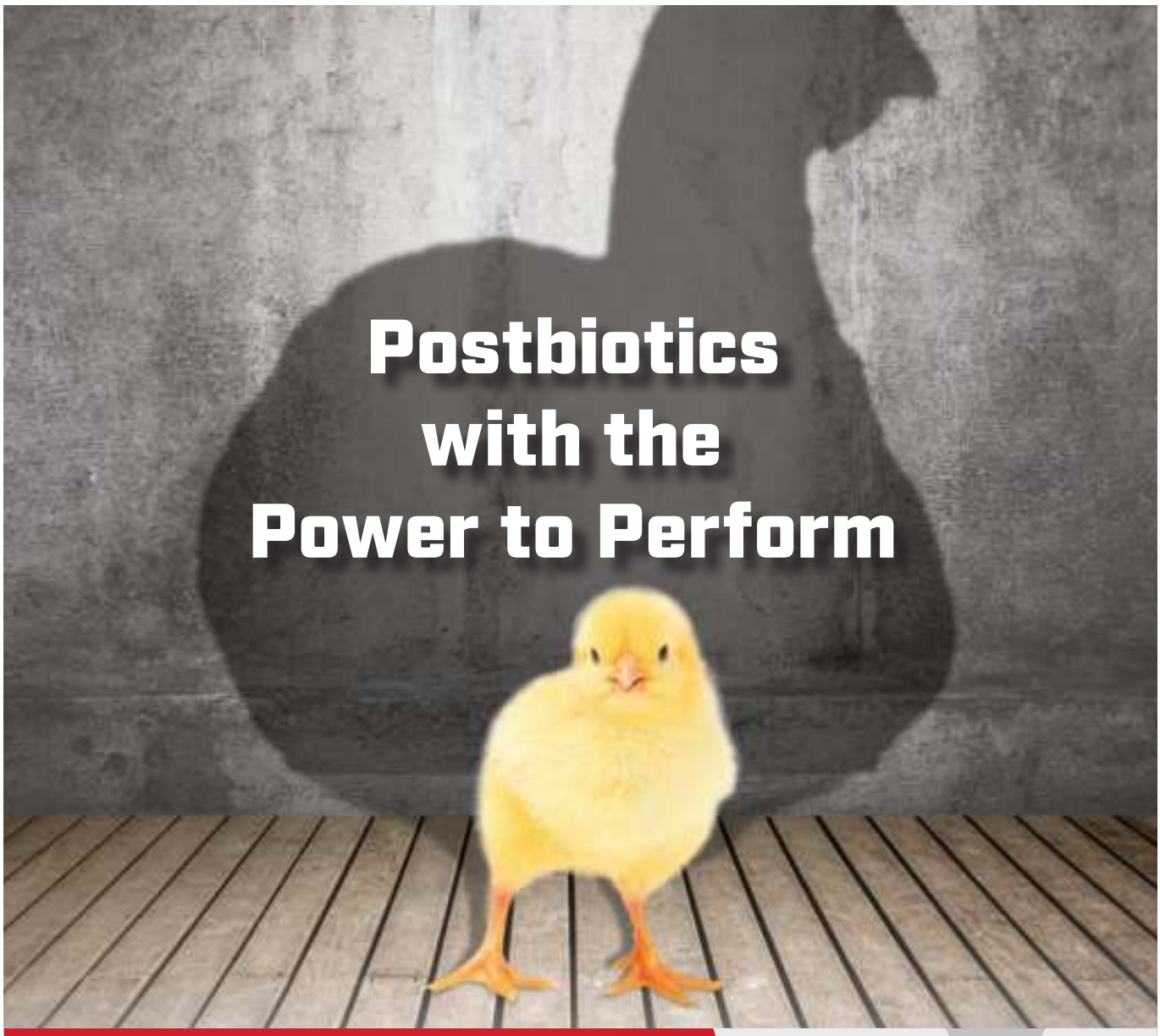
Phytase enzyme has been well accepted, most extensively used by all the nutritionists/producers in Broiler feeding and it has occupied as one of the main ingredients in Broiler diets. The new 3rd generation Phytases is robust and aggressive Phytate removers and we can take the advantage of "Extra Phosphoric effect" in reducing feed costs as well as for improving Broiler performance. The growth promoting effect of Phytase also attributed to release of Inositol which is around 30%, while releasing Phosphorus which has beneficial effect on fat metabolism and it is also works as antioxidant at cellular level.

Coming to the practical application of Phytase while formulating the diets, one need to be careful in applying matrix values especially as claimed by the companies whose as they have been derived from one or two trials under standard conditions and cannot be compared to field conditions where they will have more challenges. Better to go with the companies who are having better data from multiple trials which will be robust and will have less variation. Matrix values cannot be same for all the classes of poultry say and will differ with Broilers, Layers, Breeders etc.

Although our understanding of Phytase is clearer now, more research trials and studies is required to know the effect of super dosing (de-phytinase effect)as claimed by Phytase manufacturers. There is need to validate the phytase effect on optimal requirements of Ca, P and other trace minerals as majority of the studies were conducted during non-Phytase era. Also, the effect of Phytase when used with multiple enzymes such as NSP enzymes and Proteases need to be studied, whether benefits are synergistic or additive. Also, with new production programs such as Antibiotic free rearing the scope of Phytase will continue to exist.

References:

- Based on practical experience of Phytase use in Indian conditions.
- Some of the extracts taken from published research articles and review articles.
- Specific reference available on request.



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Enhancing the Biosecurity system in Poultry farming through Oxidation chemistry

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Biosecurity in poultry is an integrated strategy that incorporates legal and policy frameworks to assess and control risks related to food safety, animal health, and associated environmental issues. In simple terms, biosecurity refers to the methods for maintaining and keeping infectious diseases away from poultry farms or, if we have a disease issue, how we can prevent our neighbours and farms from contracting it. Millions of farmers in India rely on the poultry industry for their livelihood.

The demand for poultry meat and eggs has increased dramatically in recent years, which has led to a surge in this industry's production. The emergence of bird's superior strains (broilers achieving the slaughter weight by 35–42 days and layers with longer egg laying periods) has helped poultry farming evolve to higher production. Antimicrobials are now being used more often and indiscriminately in feed as growth enhancers in the drive for maximizing production. This poses a great risk to the existing AMR crisis.

Good management practices and the application of biosecurity measures maintain health of the flock and contributes safer poultry production.

The major component of biosecurity involves:

- Traffic management – Vehicular & human movement
- Outbreak management – Four 'I' during outbreak (Identify, Isolate, Inform, Improve)
- Flock management that involves cleaning & disinfection

Use of sanitizers and disinfectants should be logical and prudent, begin well in advance during flock replacement, and continue until the flock is marketed. Insteadof disinfection application only during an outbreak when pathogens have already penetrated through the birds' system.It is always sensible to practice effective disinfection before any outbreak.

Highlight Points

The efficient sanitisation and disinfection of poultry facilities is one of the crucial biosecurity measures that are covered in the article. How sanitation and disinfection play an ideal role in reducing the development of antibiotic resistance given the current trend of use and growing production in poultry farms. The use of oxidizing agents and other alternative chemistries with respect to their efficiency in sanitization and disinfection are highlighted in the article. The article features the benefits of the ORP method for evaluating the environment and water quality, and places emphasis on the wise use of oxidizing agents for the efficient destruction of pathogens and enhancing the productivity.

To the readers, the article explains how oxidizing agents, when combined with optimal measurements and estimating procedures, can be a versatile and highly effective chemistry to raise drinking water quality and achieve environmental disinfection, for enhancement of overall production

Effective disinfection & sanitisation

We must develop our disinfection strategy effectively because the resistance pattern of microbes varies, with microbial spores being the most resistant in nature and enveloped viruses being the most susceptible (*CDC, 2008*). The effectiveness of various chemicals for disinfection should also be carefully studied. Alcohols and Quaternary Ammonium Compounds (QAC) are categorised as low-level disinfectants, hypochlorite and iodophors as medium level disinfectants, and specific aldehydes and peroxygen compounds (oxidizers) as high-level disinfectants. (*Hygiene protocols for prevention & control of diseases, Govt of Australia*).

Meanwhile, detrimental diseases which occurs in poultry due to non-enveloped viruses such as Gumboro's disease, Chicken infectious anaemia, Inclusion body hepatitis & Egg Drop syndrome are associated with resistance to lipophilic agents such as QAC, phenols & biguanides. However certain aldehydes & oxidisers such as oxone (triple salt of potassium) are highly efficient against non-enveloped & other resistant microbes including their spores. (*Klein et. al.1995 OIE*).

Since, not all disinfectants are effective against serious diseases, diverse disinfectant chemistries that alternately target various microorganisms should be taken into consideration as a bottom line.

In poultry, the present trend is to use a triple salt disinfectant complex for efficiently enhancing the redox potential of drinking water resulting in oxidation of environmental & water borne microbes that includes even viruses & spores. The use of Oxidation-Reduction Potential (ORP) for "real time" water monitoring and recording has various benefits. Hand-held devices are affordable and could be essential back up to cross verify the operation of an in-line probe.

Studies have revealed that bacteria like *E. coli* are killed within a few seconds at an ORP value of 600 to 650 mV (Table 1).ORP is thus more direct measure of water sanitization than free chlorine.

ORP (mV)	Kill Time
500	1 Hour
550	100 Seconds
600	10 Seconds
650	0 Seconds

Table 1. Amount of contact time needed between an oxidiser &E. coli to kill it based on ORP Values (Konjoian, 2011)

It is possible to compare different oxidizer products by talking about their oxidation strength in terms of ORP rather than ppm. Instead of evaluating the effectiveness of chlorine dioxide at a particular ppm, chlorine gas at a certain ppm, and peroxide at a specific ppm, ORP permits the comparison of the three treatment modalities on an equal footing. In comparison to chlorine dioxide or chlorine gas, more peroxide based product is required to obtain the same ORP. Poultry farmers now have a far better way to gauge a product's activity based on its ORP than they did in the past by focusing on the product inclusion needed to achieve desired ppm.

For poultry farm disinfection & water sanitisation, a potent triple salt based non-chlorine oxidant called potassium peroxymonosulphate (or Oxone) is extensively used. The various applications include foot baths and vehicle wheel dips, terminal and continuous farm disinfection and water quality improvement. Most commercially available non-chlorine oxidizers include 45% potassium monopersulfate, however blended compositions that may additionally include buffers, surfactants, and/or additives for the control of water borne microorganisms are also available. Potassium monopersulfate needs to be used in conjunction with an EPA-registered sanitizer because it is not a sanitizer.

Effective non-chlorine oxidation, or the reaction with organic pollutants that maintains or improves water purity, is the function of monopersulfate. Like comparable chlorine compounds, non-chlorine oxidizers are meant to be used as an additional form of treatment. They offer extra oxidation of contaminants, which lowers the need for the main sanitizer. Since "active oxygen" performs the oxidation process from monopersulfate, it reacts with pollutants without utilising extra chlorine. (*PHTA recreational water committee, 2019*).

Oxidising salts such as potassium peroxymonosulphate is an oxidizing disinfectant with quick, broad-spectrum action as it releases chlorine and oxidises, simultaneously. It is cost efficient (low rate of use) and can be used on surfaces and in cold fogging. When it comes to steel and rubber (used in boots and tyres), Oxone has been demonstrated to be more successful than quaternary ammonium compounds (QACs), hence it is favoured for foot baths and car wheel dips (*Addie 2022*).

Traditional oxidising agents have a major limitation, as they have incomplete dissolution in cold water, which causes clogged high-pressure sprayers and limit the base disinfection activity. In contrast, oxidizer-based disinfectants, which dissolved fully in water before use have effective disinfecting properties (*Ministry of Agriculture, Govt. of South Korea, Patent publication no.KR102117677B1*). Thus, an oxidising agent that has enhanced solubility & stability should always be preferred to achieve efficient disinfection & sanitisation.

As a conclusion, with alternating chemistry to reduce resistance, use of oxidizing agent is an effective sanitizing treatment. Strong oxidizer products actively seek for electrons to capture when they are put into the water. Living organisms and other organic substances in water provide a rich source of readily available electrons. To survive and function, bacteria and fungi require a specific electrical balance, and when that balance is upset, it results in detrimental effects such as protein denaturation, cell wall and membrane rupture and disruption of life-supporting metabolic pathways etc. In essence, these microbes are killed by oxidation & overall productivity in poultry farm is enhanced.

Mycotoxins in feed and how to handle them

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Highlight Points

Mycotoxicosis cause significant economic loss associated with their consumption in poultry, are difficult to diagnose, cause immune suppression and vaccine failures, lowers poultry production and performance, affects the domestic as well as international trade, simultaneously entering the human food chain.

Grains stored under high moisture / humidity (above15%) at warm temperatures (above 25°C) or / and inadequately dried prior to storage can potentially become contaminated with fungi, that later produce the mycotoxins, that cause mycotoxicosis.

The grains and Cakes intended for poultry feeds, if not stored in well ventilated dry place, free of damage from insects, can result in mold "hot spots". Initial growth of fungi in grains and cakes can produce sufficient moisture from their metabolism to allow for further mold growth and mycotoxin formation.

Some of the common Species of fungi which infect crops / grains in the field, during storage, shipment and food processing are Aspergillus sp., Fusarium sp., Penicillium sp., Alternaria sp., Claviceps sp. Each fungal species can simultaneously produce more than one type of mycotoxin, like Aspergillus sp. can produce aflatoxins, ochratoxin, patulin, cylopiazonic acid.

Species like Fusarium can produce trichothecenes toxins (T-2 toxin, diacetoxyscirpenol, DAS, deoxynivalenol, DON), fumonisins, zearalenone, moniliformin and Penicillium sp., can produce ochratoxin, citrinin, cyclopiazonic acid, patulin etc. Several mycotoxins have been reported and isolated, as many as approximately 400 varieties, with respect to their target sites and toxicity, and with varying chemical structures have been recorded and studied.

Year after year, the prevalence of mycotoxins changes according to weather conditions, harvest time, storage time etc., Just as the prevalence of mycotoxins change, so do their combinations and concentrations in the feed ingredients and finished feeds.

In the poultry industry, mycotoxins that cause the maximum economic impact on production and performance areaflatoxins (Afla), trichothecenes (namely T-2 toxin, T-2; deoxynivalenol, DON), ochratoxin A (OTA), fumonisins (FUM), zearalenone (ZEN) and ergot alkaloids (Ergots) etc.

When the mycotoxins co-exist, their interactive effects can be classified as additive, synergistic, or antagonistic. The co-exposure of two or more mycotoxins led to more severe total effect than each individual toxin. The interaction between mycotoxins often leads to synergistic effects, when the negative effects of one mycotoxin are greatly amplified in the presence of another.

In case of poultry, synergistic effects were frequently described in instances where aflatoxins, ochratoxin A, T-2 toxin and fumonisin B1. Afaltoxin B1, were involved, aflatoxins are known to be a hepatotoxin and ochratoxin A, a nephrotoxin, acted synergistically when fed simultaneously to the layer and broiler chicks. Synergistic effects were also seen in broilers fed aflatoxin B1 and T-2 toxin, or T-2 toxin and deoxynivalenol, whereas T2 toxin and ochratoxin A caused additive effects in broilers.

Mechanisms of mycotoxins toxicity

The mechanisms of mycotoxins toxicity are not fully understood till date due to the diversity in their chemical structures and target organs. Ochratoxin A, T-2 toxin, aflatoxin B1 inhibits the synthesis of DNA, RNA, and protein and may damage DNA. Most mycotoxins can cause lipid peroxidation, damage of membrane structures and their functions, induces apoptosis (programmed cell death) leading to cellular necrosis and production of endotoxins. The mycotoxins may simultaneously cause immune suppression (impairment of immune system), hepatotoxicity (damage to the liver), nephrotoxicity (damage to the kidneys), neurotoxicity (damage to the central and peripheral nervous systems) etc.

Young chickens are more sensitive to the effects of mycotoxins. Chickens already in a stressful environment, such as high temperatures and humidity, poor ventilation, high density, and challenges of other diseases are more susceptible to damage due to the presence of mycotoxins.

The effects of mycotoxins in poultry are very complex and varies greatly according to their mechanism of toxicity and primary target organs. When several mycotoxins are present simultaneously in feed, they may have synergistic or additive effects. Their effects are diverse, varying from

THE ORIGINAL ALPHA D3

1980s
Research at University of Georgia

1989
Patent granted for the Alpha D3 metabolite

2010
Alura launches Alpha D3 in poultry

2010
Alura bring Alpha D3 to India

1α OH-D3

AlphaD3™
Vitamin

Revolutionising poultry performance since 1989

Ever since 1989, the miracle metabolite Alpha D3 has been a catalyst in helping the poultry industry attain sustainable higher production performance rates with increased profitability. Alura is the only company to have brought the original and patented vitamin Alpha D3 to market.

WHAT MAKES ALURA ALPHA D3 UNIQUE?

- Increased bioactivity in comparison to regular Vitamin D3 and other metabolites
- Improve body weight gain and FCR
- Prevents black bone syndrome
- Improves egg shell quality and maximises production of saleable eggs
- Synergetic and Complementary effects with Phytase
- Proven ROI in Broilers & Layers
- Thermostable for palletisation
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USAGE

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We are the only company to have extensively tested the efficacy of this metabolite through academic papers, clinical trials, and field tests. More than 40 published reviews in scientific journals proves Vitamin Alpha D3 produces more chicken protein, with a better quality at a lower cost.

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immune suppression to death. A low level of mycotoxins in feed even below its detectable levels when exposed for long periods can impair the immune system leading to the immune suppressive conditions. Aflatoxins, ochratoxin, trichothecenes, and fumonisins are known to induce immune suppressive effects in chickens, rendering them more susceptible to several bacterial and viraldiseases. In addition, low level of mycotoxins can have an antimicrobial effect and can cause feed passage.

Mycotoxins damage the G I Tracts integrity and functioning and can inhibit the absorption of vital nutrients for maintaining good health condition, growth, productivity, and reproduction, include amino acids, lipid soluble vitamins (vitamin A, D, E, and K), and minerals, especially Ca and P leading to poor egg shell quality and bone strength.

The impact of impaired absorption of vital nutrient on the performance of poultry are seen as poor growth/weight gain, lameness and leg problems, decreased egg production, poor egg shell and interior egg quality, decreased fertility and hatchability in parent stocks, and immune suppression.

Diagnosis of mycotoxicoses

In chicks and growers, there will be damage to G I Tract, leading to poor growth, lack of uniformity, body weights less than standard for that week, increased mortality, poor feed consumption and efficiency. In adults drop in feed consumption leading to fluctuations and reduction in egg production, poor egg shell quality, lameness, reduction of body weight and increased mortality are usually seen.

How to handle mycotoxicosis in Poultry

Once diagnosed as mycotoxicosis (irrespective of the variety and the combination) follow the time tested program given below for best results and quick recovery.

1. Identify the ingredients responsible for it, stop its usage, reduce the quantity being or dilute it.
2. Increase the quantity of toxin binder being used by at least 50 % for the next 2 to 3 weeks.
3. As stated earlier mycotoxins arrive in a variety of combinations, any one toxin binder will not be able to handle all of them. A mixture of 2 or 3 different types o9f binders is suggested.
4. Increase the TM and Vit Premix quantity being used by at least 50 % for 2 to 3 weeks.
5. As the dead body cells and certain bacteria (both live and dead) will produce endotoxins, which will further complicate the recovery process, use of **Notox @ 300 to 500 gms per ton of feed,** it will be a great help in the recovery process.
6. Use of **Toxol @ 2 to 2.5 Kgs per ton of feed,** will prevent further damage to the G I Tract, help the liver and kidneys recover from damage already done, simultaneously preventing further damage, reducing the convalescence period, makes the birds eat properly and return to its original level of production.
7. As the effects of mycotoxicosis is a severe stress, prevent all other stresses like the shifting, grading, vaccinations, handling, or making drastic change's in their nutrition or management.
8. Use of an anti-stress medication through drinking water will be additional help and support.
9. In Chicks and growers, ensure the body weights are as per the breeds standard for their age, if less, increase the protein level in the feed or continue using the chick crumbles for additional 2 to 3 weeks or till the body weights reach the standard, then change to growers mash/pellets/feed. Also support with **Protosol @ 10 ml/100 birds** for 5 to 6 Hrs morning drinking water.
10. Before and after every vaccination program, for the mycotoxin affected chicks and growers, to prevent vaccine failure and get good protective immunity, use immune booster like **Immolyte @ 10 ml/100birds**, for 5 to 6 Hrs morning drinking water.

Clinical signs and pathological lesions related to different mycotoxins

Symptoms and lesions can be very general and vary greatly between mycotoxins and are closely related to poultry species, type of mycotoxins, dose ingested, and duration of exposure. In the field, poultry of all types are simultaneously exposed to multi-mycotoxins and subjected to a broader variety of stressing factors, making the diagnosis difficult and outcome unpridictable. Aflatoxins are known to have a hepatotoxic effect in chickens.

Trichothecenes affect actively dividing cells, such as those lining the gastrointestinal tracts, skin, lymphoid and erythroid cells. They have caustic and irritant effects on the skin and mucous membrane.

Ochratoxins most commonly found in the field is ochratoxin A (OTA), as it is known to be nephrotoxic, damage is seen in the kidneys. Residues of OTA may be found in liver, kidneys, muscle, and eggs and possess carcinogenic effects, which may be harmful when consumed by humans.

Fumonisin which is most frequently found in the field is fumonisin B1. Fumonisins disrupt sphingolipid metabolism and block the synthesis of complex sphingolipids from sphinganine (Sa) and sphingosine (So). As a consequences, Sa and So accumulate in tissues and their accumulation can be used as a biomarker to indicate fumonisin contamination.

Zearalenone is known to be primarily an estrogenic mycotoxin, this toxin appears to bind to estrogenic receptors and results in hormonal changes. Chickens are fairly tolerant to zearalenone; therefore high doses are required to cause reproductive disorders. In the field, zearalenone and DON were found simultaneously in feed and raw materials and may have synergistic interaction.

Low Protein Diets (Diluted Protein – Amino Acid Levels)

As a solution to cope with increased feed cost in Animal agriculture

The Animal agriculture industry is faced with serious and multi-faceted challenges resulting in steep increases in operational expenses. Feed costs, which constitutes 65 – 78 % of total operational costs depending on the species, type of operations, and feeding strategy are most severely affected. Ingredient costs and availability, consistency in quality, global logistical issues and increased shipping costs, higher cost of fuel, energy and raw materials, and a drop in demand and/or market prices are taking heavy tolls that might result in some major changes in market dynamics and future of the industry, with more profound effects on small and medium size operations.

In many cases, the initial reaction to such dramatic changes in ingredient prices and consequently higher feed cost, is the elimination of feed additives in order to reduce cost of feed i.e. cost per tonne of feed produced. This practice, in fact might give an opposite outcome in terms of efficiency and Return on Investment (ROI). The unwanted and/or unforeseen outcome of such reactive decisions could be higher Feed Conversion Ratio (FCR), lower Average Daily Gain (ADG), longer production cycles, and higher Feed Intake (FI).

There are a number of potential solutions, both short term and long term to cope with increased costs and take proper steps to alleviate the pressure and recover some of levels of costs. One such opportunity would be to reformulate the feed ingredients (based on availability and practical applications) and apply maximum levels of enzyme matrix values to achieve best ROI. As a part of a general efficiency improvement and consequently feeding strategy, the use of low protein diets (potentially with incorporation of alternative ingredients) and application of proper enzyme combinations at optimal dose levels, and more importantly implementing matrix values would be a very viable, practical, and beneficial approach. Feeding strategy plays a critical role in coping with such situations but the diet formulation is only one piece of the puzzle.

Low Protein diets i.e. diets with diluted levels of Crude Protein (CP) and hence amino acids, might be a practical solution if applied properly. Feeding a low crude protein (CP) diet fortified with individual amino acids (AA) is one of the strategies which can bring down feed cost. Apart from being able to sustain performance it may also reduce N excretion into the environment thus reducing the environmental footprint from animal agriculture.

There are many references regarding application and practical implementation of low protein diets and most point out that some special considerations must be taken into account. These include amino acid balance and ratios that might differ from benchmark or routine CP levels and ratio of CP to Energy, ingredient levels especially corn and wheat, and overall feeding strategies and application of enzymes and additives.

The genotype of modern broiler breeds ensures a faster growth rate and body weight gain (BWG) and improved FCR and this requires supply of highly digestible protein sources. In practice, most diets are formulated with some level of "additional margin" that results in over feeding nutrients such as protein. This additional or undigested fraction can cause shiftsand imbalance in the existing microbiota leading to gastrointestinal disorders or diseases.

Limited availability of all crystalline AA at a commercially feasible price may force a proportionate reduction in overall AA density when a low CP diet is formulated, and this may result in inconsistent performance. The more deficient the non-essential AA (NEAA) are the greater will be the shunting of the essential AA (EAA) to the process of NEAA synthesis thus limiting the supply of the former to the process of BW gain. Increasing AME supply, however, should increase protein accretion, although up to a genetically predefined point, and supply of AME beyond this point would merely translate into an excess of body fat. Although the aforementioned level of dietary AME is difficult to define precisely, available data suggest that the optimum level of AME in diets is lower than what is being fed commercially. These findings allow feed formulators to marginally bring down the density of some critical nutrients without compromising performance significantly.

Exogenous enzymes like phytase as well as xylanase, amylase and proteases either independently or in combination (XAP) serve as an adjunct to this approach whilst imparting profit to the feed cost.

Danisco Animal Nutrition

Axtra® XAP

THE WINNING FORMULA FOR COMPLEX POULTRY DIETS

Xylanase, Amylase, Protease enzyme combination

- Radical feed cost reduction
- Increased inclusion of high fibre by-products
- Maximum flexibility in formulating complex diets
- Heat stable to 95°C/203°F

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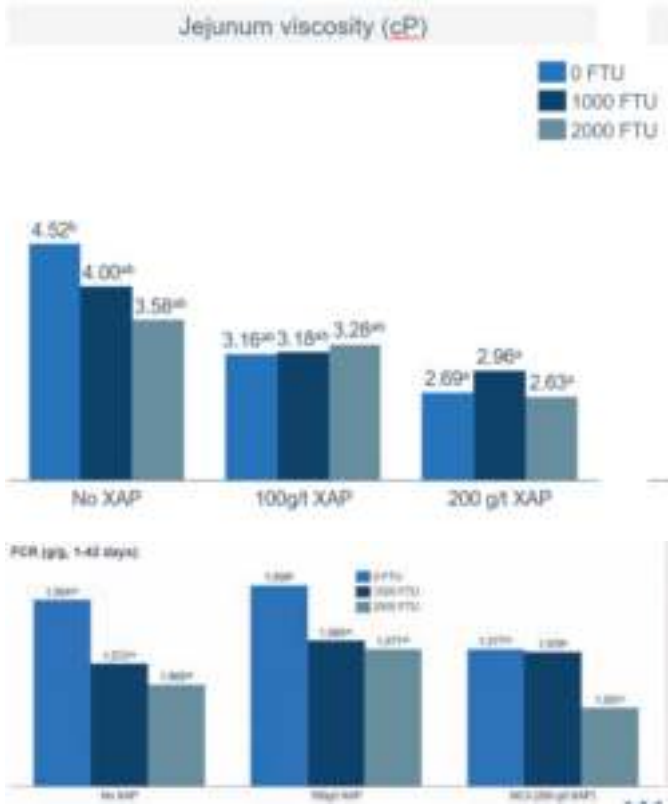
& creativity meet

The effects of phytase in improving calcium (Ca) and phosphorus (P) digestibility have been well documented as well as improvements in amino acid and energy digestibility. Increasing the inclusion level of phytase has shown potential to elicit more pronounced improvement in apparent ileal digestibility (AID) of AA though the possibility of a diminishing return beyond 1000 FTU/kg was not ruled out by these authors and it is shown that higher dose levels calculated based on diet specifications can be advantageous.

Supplementation of xylanase into corn-based diets reportedly increased fat and starch digestibility by facilitating digestion of resistant starch and improving access to cell walls via reduction in cell wall integrity, and/or modification of intestinal microbial communities through the production of prebiotic-like oligosaccharides. Combining phytase with XAP has reportedly spared up to 100 kcal AME/kg in broiler diets.

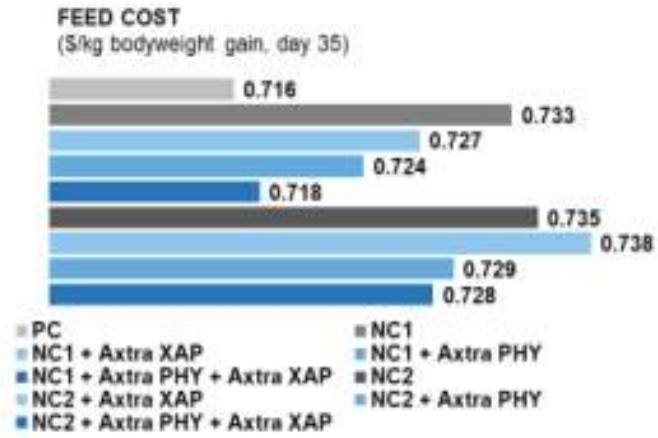
The amino acids released by the purported extra-phosphoric effects of phytase achieved with beyond the commercially practiced dosing regimens a proportionate amount of AME release is necessary which is possible if the level of xylanase or XAP is increased in diets. In recent studies the use of full matrix values (mineral, energy, and AA levels) were examined and proved to be a viable and practical strategy and the application of full matrix values of combined enzymes (Phytase + XAP) was proven in the effects of phytase and XAP at higher than the commercially practiced levels of inclusion either alone or in combination on performance and key metabolic indices in broiler chickens fed diets which were reformulated to contain (as per the combined matrix of the phytase and the XAP) 3% lower CP (and AA) and 120 kcal/kg less AME from 1-42 d period.

In summary, the animal agriculture can partially overcome current challenges by adopting lower protein diets combined with optimized dosing of phytase and non-phytase enzymes without negative impacts on animal welfare or performance. We believe that continuous investment in animal studies to demonstrate these concepts under practical conditions is important to support our customers in the adoption of these and other concepts that drive sustainability and profitability for the livestock industry.



AXTRA® XAP AND AXTRA® PHY IMPROVES GROWTH PERFORMANCE AND REDUCES FEED COST IN BROILER DIETS WITH COMBINATION MATRIX APPLIED

Results:



[abc] Values without a common superscript are significantly different (P<0.05)
Axtra® XAP at 100 g/tonne to provide 2000 U xylanase, 200 U amylase and 4000 U protease per kg of feed

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Jugalbandi (joint action) of Enzymes & Probiotics in feed digestion & gut health

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GLOCREST Pharmaceutical Pvt Ltd

Fact is, no one is comfortable to manage the feed cost and in such a scenario, the small and marginal farmers find it more difficult. In fact, everyone finds it difficult. Because of continues fluctuation in market price of ready birds, eggs and feed ingredients, it becomes more challenging. Since one cannot control raw material prices and the market price of our produce, it's extremely important to get utilized penny by penny whatever we use as feed and feed supplements.

Recently soiled eggs (dirty eggs) also becoming a common problem due to alternate raw material usage or other unknown factors.

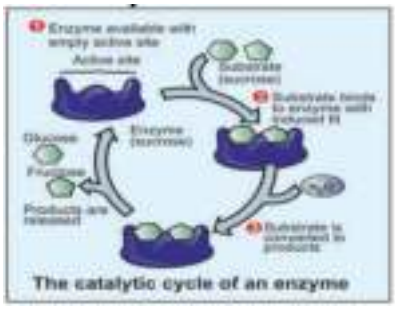
Therefore, *Jugalbandi* of enzymes and probiotics become an integral part to utilize the feed and maintain healthy gut and subsequently reducing problem of dirty eggs up to some extent.

Proper blend of enzymes and unique strains of probiotics is the most required practice to **improve performance, feed utilization, gut health and minimized environmental pollution.**

Looking into those practical challenges of feed digestions and maintaining proper gut health, GLOCREST introduced tried & tested solution as Enziprob. It is perfect combination of multi enzymes and multi probiotics. It contains multi enzyme which is a functional protein that stimulates or accelerates the rate of specific chemical reactions.

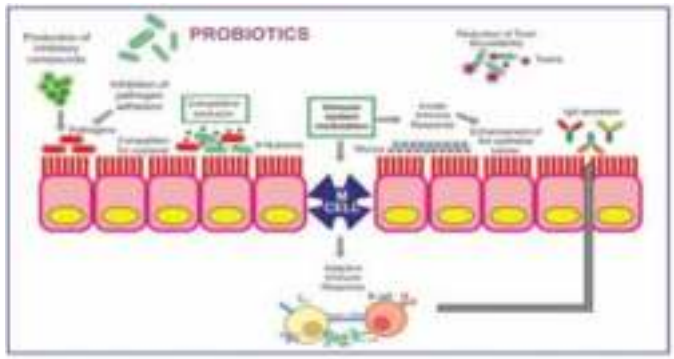
Enzymes in Enziprob are Xylanase, Alpha amylase, cellulase, Protease, Mananase, Lipase and Phytase. These are digestive enzymes which are natural substances needed by body to help break down and digest feed ingredients.

Role of Enzymes



Probiotics in Enziprob are *Lactobacillus acidophilus, Saccharomyces boulardii, Bacillus subtilis, Bacillus licheniformis, Bacillus megaterium, Bacillus polymyxa*. These are different type of bacteria used to improve digestion and restore normal flora.

Role of Probiotics



During the transit of digesta in the duodenum, jejunum, and ileum, they remove fermentable substrates that could impact digestibility and impact gut microbial balance. During the caecal phase, degradation products of sugars etc.

Xylanase is becoming an extremely important enzyme as an individual one or in combination with other synergistic enzymes. Xylanase is often used to improve cereal processing. The complex of cocktail enzymes like Xylanase, Alpha amylase, cellulase, Protease, Mananase, Lipase, Phytase ensures best feed digestion from various feed ingredients being used in the diet.

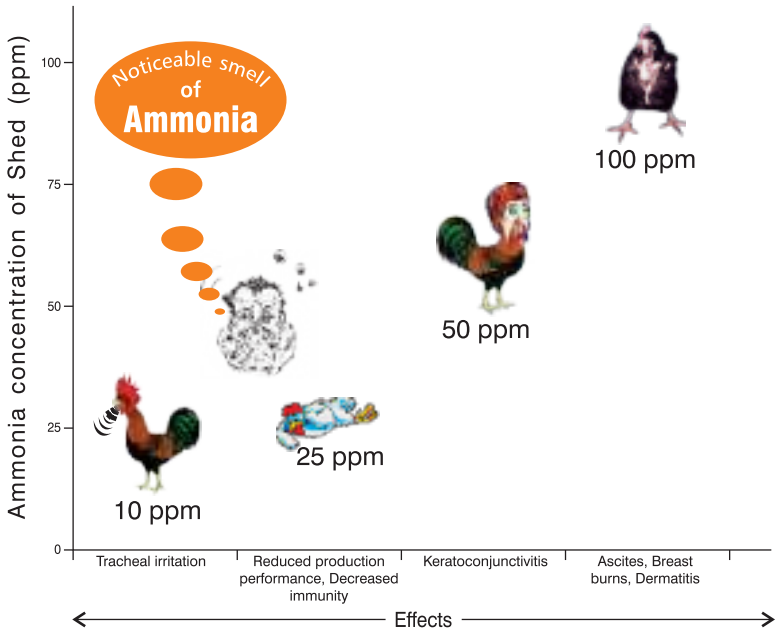
Probiotics in Enziprob used as nutritional tools in poultry feed for promotion of growth, modulation of intestinal microflora and pathogen inhibition, immunomodulation and promoting meat quality of poultry.

It seems to be more than just a gut feeling. Probiotics and enzymes have been proven to have a positive effect on the gut health of chickens and improved feed digestion.

(Some information and images taken from Internet).

AmmoFree Premix

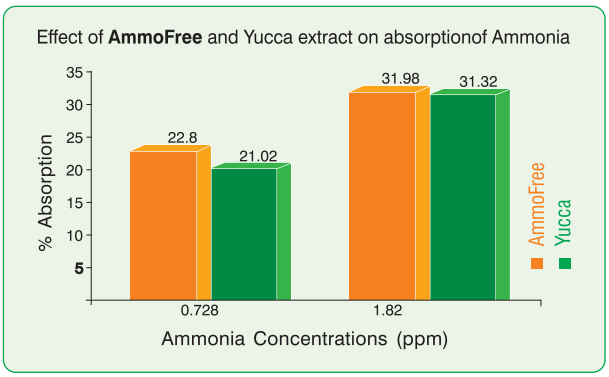
For ammonia control in poultry house



At 25 ppm Ammonia in poultry shed

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

SCIENTIFIC VALIDATION



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

Group	Livability (%)	Birds showing respiratory discomfort	Faecal NH3 (g/kg dry faeces)	
			Day 21	Day 42
Control	95.00	7	3.86	3.92 (+1.55%)
AmmoFree 100g/ton	96.67	X	3.95	2.71 (-45.75%)

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

USAGE

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

FEED INCLUSION RATE

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

PRESENTATION

1 kg& 10 kg bag

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