English monthly from Hyderabad, India

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# Poultry Fortune

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# DECONTAMINATION PPROGRAM WITH BIOXY & ENHANCE

## PROBLEMATIC

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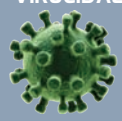

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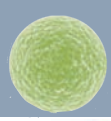

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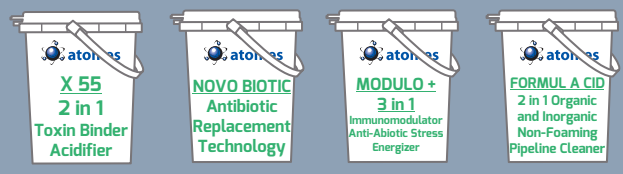


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# It was a meaningful discussion by Experts, Stalwarts ...

## *Kashmir needs stakeholders friendly **Poultry Policy** to provide more employment*

**Dear Readers,**

The September 2020 issue of ***Poultry Fortune*** is in your hands.

Post Covid-19, I found good and meaningful discussion and analysis by some of the below stalwarts and experts from India and overseas on various aspects and issues of Indian and overseas poultry industry through their columns and special features in Poultry Fortune publication.

I appreciate Mr O. P. Singh of Huvepharma (Rebuilding the foundation: no more a luxury, but a necessity), Dr Ramdas Kambale of Vetphage Pharmaceuticals (From cold storage facilities to more hygienic rearing, Poultry farmers must ensure good health of their flock post Covid-19), Dr Shekhar Basak of Innovista Feeding Solutions (Covid-19, An Indian Opportunity for Chicken Processing ?), All India Poultry Breeders Association (Covid-19: with projected loss of Rs 22,500 cr, Indian poultry sector seeks Centre's intervention) and Marel Poultry from Boxmeer, The Netherlands (How to install Poultry Processing plants in Covid-19 times ?) and for taking their valuable time to focus on the respected issues of the industry.

There is a need of more such personalities from the industry to join in the discussion and do the needful in the interest of poultry industry in India and overseas.

Poultry is a growing industry in Kashmir. As basic requirement to take-up poultry farming is the land and shed, if government extends support through subsidy for land, construction of poultry sheds and ease of movement of chicks and grown up birds, and marketing facilities this industry can grow big in the state. As the Day Old Chicks have to travel from far off states like Haryana and Punjab the transport and traffic authorities in J&K should ensure reach of the trucks to the destination with ease. If the government ensure the above infrastructure and facilities, this industry can provide valuable employment and revenue to lakhs of people in the state.

You may also find news about - Moving Towards "Atmanirbhar Bharat' in Poultry Meat Production & Consumption Post COVID-19 Chicken meat can arguably be considered as "King of all meats' owing to its availability, taste and nutritive values. In India, the chicken meat consumption is steadily rising YoY and the annual consumption in FY 2019-20 was considered to be around 3.8MMT with a CAGR of around 6%. For the financial year 2020 - 2021, this consumption is anticipated to decrease owing to numerous factors including reduction in placements, negative social publicity, prevalence of misconception of getting Covid-19 infected through eating chicken, increase in retail cost of chicken meat and reduction in disposable income of people amid continuous lockdowns and slowdown of economy as a whole.

In the Articles Section, article titled – "Optimizing utilization of Fats & Oils in Poultry Nutrition" written by Dr Sandeep Gavali and other authors highlighted that Fats and Oils have been used by the poultry industry around the globe as a supplemental dietary energy source in poultry feed to yield higher levels of metabolizable energy at an economically justifiable price. Hence, understanding fats/ oils and their digestion as well as absorption from poultry gut is a most important factor for optimizing the utilization of fats and oils to provide higher level of metabolizable energy to birds. Supplementation of exogenous emulsifiers (more hydrophilic in nature) plays major role to optimize utilization of fats and oils from poultry gut. Some synthetic emulsifiers like GPEGR/PEGR (Glyceryl Polyethylene Glycol Ricinoleate) are more capable than Lecithin based emulsifiers in reducing the feed cost by their energy saving effects.

Another article "mg dosage can fetch millions" written by Dr Ram Moorthy D explained that Exploring the creative options with 'time framed task' that are within our control would be the assured keys for us to emerge as the winners with profitable poultry farming. Such ignited thinking is 'must & urgent' during current pandemic situation and it's inter-related scenes, 'shuttling the market dynamics drastically.

Another article titled "Heat Stress and Egg Shell Quality in Poultry" written by Dr T. Prebavathy, highlighted that stress factor in poultry and various clinical signs and pathology of heat stress in poultry, effect of heat stress on egg shell quality, temperature and humidity index in commercial poultry farms, prevention and control of heat stress in poultry. Also discussed about the recommendations for minimizing heat stress in commercial poultry farms in respect to maintain egg shell quality.

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 regularly and update yourself. Wish you all fruitful results in your efforts.

M.A.Nazeer
Editor & Publisher
Poultry Fortune

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**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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# COVID-19 lockdowns have led to a dramatic reduction in food waste – aiding the fight against climate change

*Coronavirus lockdowns have made consumers more frugal with food, with many consuming leftovers and embracing home cooking. If the trend continues, experts believe it will provide a major boost in tackling climate change.*

According to an in-depth analysis from Reuters, many consumers in the developed world have embraced thriftiness and cut down on food waste during the coronavirus crisis. Clint Parry, a 33-year-old model builder at Legoland in Michigan tells Reuters that he and his family are using virtually all of their leftovers. "...we used to waste food because we would forget to pack it and just pick up fast food on a lunch break," he says. Now, he scours his cupboards to look for potential ingredients for meals.

Experts believe that if these habits continue, it will provide a major boost in tackling the global climate crisis.

The UN Food and Agriculture Organisation estimates that a third of the world's food is wasted every year. Forests are cleared, fuel is burnt and packaging in produced just to provide food which is thrown away. Meanwhile, rotting food in landfills releases more greenhouse gases into the atmosphere.

As a result, food waste is responsible for around 8 percent of global greenhouse gas emissions, a similar amount to road transportation.

"The next crisis will be the climate crisis and the best thing you can do as a consumer is reduce

food waste," said Toine Timmermans, programme manager for sustainable food chains at Wageningen University in the Netherlands.

Household food waste in Britain, to take one country, fell significantly in the early phase of the lockdown in April with just 14 percent of four key items - bread, chicken, milk and potatoes - thrown away, according to research by environmental group WRAP, which conducted thousands of interviews.

Pre-lockdown, an average of 24 percent had been wasted.

Waste had begun to rebound by June, with a second WRAP survey putting waste of those products at 18 percent, but remained significantly below pre-lockdown levels.

"Although people are reporting wasting more food as restrictions lift the positive news is that 70 percent of people want to maintain their new-found food management behaviours in the long term," said Richard Swannell, Director at WRAP Global which works with governments to reduce food waste.

"This is an encouraging sign that people are taking this opportunity to adopt less wasteful habits in life after lockdown."

**Official efforts to curb food waste**

A survey from Germany's Food and Agriculture Ministry also showed consumers had started to show more concern about wasting food during the coronavirus crisis.

The government had launched an anti-food waste campaign called "Too good for the bin" before the crisis, urging the public not to automatically throw food away after the sell-by date but to smell and taste it to see if it was still in good condition.

The ministry's survey, undertaken during the pandemic, found that 91 percent of German consumers questioned were now checking food after its sell-by date and not automatically throwing it away.

This compared to only 76 percent in a similar survey in 2016.

Food waste is not restricted to the home, but it is the biggest source in many countries.

The European Union has published a study estimating that 53 percent of food waste was in households and 11 percent in production, with the balance in areas such as processing and retailing.

China's President Xi Jingping said this month that the amount of food wasted in China was "shocking", prompting many local governments to launch related campaigns.

For Parry in Michigan, and many others, thrift is here to stay.

"Our food costs have definitely gone way down, since we are not buying out when we have perfectly consumable leftovers in the fridge at home," he said.

# Research unveils direct link between low levels of mycotoxins and poultry performance

Queen's University Belfast and Devenish have published a study to prove the negative effect of low levels of mycotoxins on broiler chicken health and performance.

The three-year study, a first of its kind in this field, was conducted by Oluwatobi Kolawole at the Institute for Global Food Security (IGFS) at Queen's University Belfast, in partnership with agri technology company Devenish. Its findings demonstrate that even low levels of mycotoxins, below EU regulatory levels, have a direct negative impact on birds' performance.

"Mycotoxins are chemicals produced by fungi that can have serious effects on health, performance and the immune system of animals and humans if they get into feed or food," said lead researcher Oluwatobi Kolawole.

"Whilst it is well known that mycotoxins at high levels negatively impact animal health, to date it has been difficult to accurately examine the impact of these at low levels. This was, therefore, a long-term feeding trial to evaluate the effect of low doses of mycotoxin mixtures on the performance of broiler chickens being fed a naturally-contaminated diet.

"We monitored birds over 18 crops and continually examined the level of mycotoxins against the performance of the birds.

"Whilst the levels of mycotoxins were low, the mixture of those present throughout the study had a profound negative impact on bird health and performance. The study showed that an increase in mycotoxins led to an increase in Feed Conversion Ratio (FCR). Increased levels of mycotoxins also led to a decrease in feed intake by the birds and a decrease in body weight," said Oluwatobi Kolawaole.

Professor Chris Elliott, Institute for Global Food Security (IGFS) at Queen's University Belfast, continues: "This piece of research, in partnership with Devenish, revealed fascinating results that are of crucial significance to poultry producers and will undoubtedly lead to future collaboration to further extend our knowledge in this field.

"Whilst regulatory levels of mycotoxins set by the EU are centred around safety, this study was centred around performance. The negative impact that mycotoxins had on bird performance highlights the importance of poultry producers being aware of even low levels of these toxins. "Therefore, they must consider how they are going to mitigate the impact of even low levels of mycotoxins in their animals' diet.

"Importantly, the study identified a specific mix of mycotoxins (DON, FBs, ZEN and DAS) that are relevant to poultry. For that reason, we can conclude that best combatting the issue can be achieved through an additive specifically designed to target poultry specific mycotoxins," Professor Chris Elliott said.

Devenish and Queen's University Belfast have a long-standing partnership built around pioneering nutritional and technical research.

"Devenish is proud to have once again collaborated with our partners at the IGFS, Queen's University Belfast, to undertake this significant piece of research," added Jonny Lester, Poultry Technical Manager, Devenish.

"We have calculated the impact of these mycotoxins on profitability. With FCR across crops differing by up to 14 points and each point of FCR resulting in additional feed costs, feeding a species-specific mycotoxin binder, such as Smart Shield AV, at low levels all year and increasing it as required, is likely to have significant financial benefits.

"As well as performance and profitability, there are also sustainability benefits in reducing mycotoxin presence in a poultry flock. Improvement in this area would reduce raw material input such as soya and the land use change associated with its use. Reduction in FCR would also have the potential to reduce nutrient excretion and its impact on the environment.

"This type of 'precision nutrition' research, when applied commercially, allows our customers to get closer to the genetic potential of their stock and ultimately brings producers benefits across performance, profitability and sustainability," Lester said.


**Courtesy:** *Cargill*


# PRODUCT LIST

## MYCOTOXIN BINDERS

| | |
|---|---|
| **Free-Tox® XP** | Mycotoxin binder |

## ENDOTOXIN REDUCERS

| | |
|---|---|
| **EndoBan®** | Endotoxin reducer |
| **EndoBan® FT** | Endotoxin + mycotoxin reducer |

## ENZYMES

| | |
|---|---|
| **Nutrase® Xyla HS** | Endo-xylanase |
| **Nutrase® P** | Phytase |
| **Nutrase® BXP** | Multi-enzyme complex |

## PIGMENTS

| | |
|---|---|
| **Colonut** | Natural yellow pigment |

## ACIDIFIERS

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|---|---|
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| **Nutracid Protecto** | Coated acids |
| **Nutracid Focus** | Coated acids/salts |

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| **Nutracid InteStim** | Coated butyrate with nucleotides |
| **Y-MOS** | Autolysed dried yeast cell walls |

## WATER-SOLUBLE SUPPLEMENTS

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# Novus sets up *Project Destiny*, aims at becoming a leader in gut health solutions

***Dr Vaibhav Nagpal, CCO & VP – Asia and Mr Neeraj Kumar Srivastava, Managing Director – South Central Asia, Novus Animal Nutrition answered questions on Project Destiny and future plans of Novus Animal Nutrition. Excerpts:***

*Dr Vaibhav Nagpal, CCO & VP - Asia*

**What is Project Destiny?**

Project Destiny is Novus's multi-phase strategic plan aimed to establish the company as "a leader in gut health solutions for the sustainable production of protein through nutrition."

**What was the reason for the restructuring?**

The main purpose of restructuring was to develop organization structure and capabilities to establish Novus as a leader in gut health solutions. We also took this as an opportunity to develop a decentralized customer-centric organization so that wecan provide the regional teams (sales, technical, marketing, etc.) with more autonomy to make decisions close to the customers.

**Explain Strategic/tactical/ operational Level Changes?**

The first step was creating our new Executive Leadership Team, which was established in April. From there we reorganized our teams into three regions – Americas, EMEA and ASIA. Americas is comprised of two sub-regions – North and Central America, andSouth America. We consolidated our services in Europe and Middle East, Turkey, and Africa to create EMEA. Asiais comprised three sub-regions Each of the three regions has a chief commercial officer and each sub-region (we call them our world areas) has a director to oversee operations. In Asia the world areas are Northeast Asia, headquartered at Shanghai; Southeast Asia Pacific, headquartered at Bangkok; and South-Central Asia, headquartered at Chennai. We have also established strategic marketing and technical teams at the global and regional levels that will allow us to better understand our customers' needs and industry trends. We also decentralized corporate functions to support more agility within our regional offices.

**Novus completed a restructuring just a few years ago. Why change again?**

As with any company, we believe in continuous improvement and adapting to our customers' needs. Corporate or organizational structures that may have fit several years ago may not be effective in today's environment, and we want to provide our employees with a structure that allows them to succeed and serve our customers to their utmost capability.

*Neeraj Srivastava, Managing Director, SCA*

**How will this affect the customers?**

Our customers should experience a heightened level of service and responsiveness from their Novus representatives. Our plan through this change is to bring us closer to the customer by thinking the way they think.

**How will this affect the industry?**

The industry should see a renewed focus from Novus and that our efforts, energy, and resources are invested in ways that establish us as a leader in gut health through nutrition.

**Future goals after the implementation of Project Destiny? Where do you see Novus in next five years?**

Our goal as we implement Project Destiny is to establish a more agile working environment where Novus employees can execute quickly on behalf of the customer while also being held accountable for their own professional success. By empowering our employees, we allow them to create better relationships with customers who come to value our expertise and view us as a trusted partner. We are learning from our successes over the last 29 years to create a clear and recognizable Novus brand within the global animal agriculture industry. Our overall goal is to have Novus be known as the gut health expert in the industry. It will take some time to get there but we are committed to this path. Gut health is vital, and we have solutions that can make a difference on the farm.

**Are there any new Gut Health products in pipeline?**

We have an outstanding opportunity in the HMTBa molecule, which is the methionine source for our ALIMET® feed additive. The molecule is surprisingly versatile and has allowed us to create our line of bis-chelated MINTREX® trace minerals and a powerful acidifier that has the added benefit of methionine, ACTIVATE® nutritional feed acid,to name a few of our current HMTBa-based products. We are certainly exploring new differentiated products and solutions that we can bring to our customers.

**What is the biggest change management challenge you've faced ? And how did you handle it?**

Change always comes with some difficulty and this change has been especially challenging because many of the Novus employees globally are working remotely due to the coronavirus pandemic. We recognize that being physically apart can stifle conversations that would occur naturally in an office environment. As such, our objective during Project Destiny has been to be transparent with our employees about our goals and how we aim to achieve them as well as have regular structured communications so that they can understand the context and what is coming.

A very positive aspect of Project Destiny is that it has provided a great opportunity to professionally advance/ elevate some exceptional employees into new and more complex roles.

# How local farmers handle poultry infections in southern Africa

Bwami Gausi claims to have lost 1,500 chickens within a year due to a strange illness of which he had no ideas regarding possible treatment. The development meant that he lost about $ 7,500 of potential revenue. Gausi is a Malawian farmer based in the central region district of Ntcheu.

At his base operation are about 500 chickens and 200 ducks, both of African breeds. At this level, Gausi attracts a lot of admirers and his place is never short of visitors interested in learning from him.

"I have lost about 1,500 birds due to Newcastle and other strange illnesses" he says. He explains he could only identify Newcastle because it has happened often in the area over the last decade. "For the other illnesses, I could only see swollen and watery eyes mostly" he continued.

Asked on how he dealt with the "strange" illnesses, the farmer said it was all about guessing. "I have used nthula (wild berries) and phulusa (wood ash) to no avail."

He says, however, similar concoctions have worked before in dealing with Newcastle disease previously. He attributes his ordeal to the scarcity of vertenary extension services in the country.

Across the border, in Tete, Mozambique Joseph Tishinga manages about 2,000 broilers. He has been in business for about three years and supplies chickens to hotels and restaurants in the city. Contrary to Gausi, Tishinga plies the business in an urban setting where there are a lot of vertenary service professionals.

Tishinga claims that the service is costly to most up and coming farmers. "This gives established hatcheries and farms a higher leverage over us. If you compromise on the health of your birds, then you have lost it all," he says.

He said the development makes local farmers go for cheaper options such as herbal concoctions and liquor.

The story is different for Dwyne Knight, an upscale farmer with an established hatchery and farm in Lichinga, Mozambique.

"Here where I am I don't have any diseases issues. I rest my sheds for 3 weeks and clean with high pressure

washer and disinfectant. I do not allow any vehicles in my chicken areas," he said. He says he tries to keep minimal external influences in his farm.

A vertenary expert, Hastings Chongolo, admits that there a lot of gaps in Vertenary extension services. "Less than 20% of farmers have access to vertenary services and these are mostly in the urban settings. It means that the majority of farmers approach animal diseases on trial and error basis," he said.

He added that the challenge becomes worse due to high illiteracy and low uptake of digital information as most farmers fail to make use of information already available.

The poultry industry is among the biggest and most promising emerging economic sectors in southern Africa.

# Weekly protein digest: broiler and fryer prices weaken slightly

**US Broiler/Fryer Market at-a-Glance**

USDA issued the following report on the US poultry market.

Whole broiler/fryer prices are trending steady to weak for all sizes. Offerings of all sizes are light to moderate in the Central region, moderate to heavy in all other regions. Retail and food service demand is light to moderate for current trade needs. Processing schedules remain normal to reduced.

Floor stocks are sufficient. Market activity is slow to moderate. In the parts structure, prices are trending steady to weak for dark meat items and boneless skinless breasts. Wings and tenders are steady to firm with some premiums noted, and the balance of parts are steady. Supplies of tenders and wings are clearing satisfactorily. Dark meat cuts and boneless skinless breasts are moderate to heavy with jumbo size breasts and leg quarters in the weakest position. The remainder of parts are mostly moderate.

Market activity for parts is slow to moderate. In production areas, live supplies are moderate to heavy. Weights are mixed, but mostly desirable.

**USDA National Chicken report**

Retailer featuring of poultry declining

Incentives to purchase US chicken have dropped by half, along with the feature rate and activity index suffering a decline as well, USDA said in its latest National Chicken report.

Prices for whole birds are on the rise with the exception of bagged roasters. In the white meat section, regular pack options for B/S breasts, tenders, and split breasts are the better price options during this week's ad cycle. Most dark meat items are selling at steady to higher prices, but tray pack leg quarters, legs, and value pack B/S thighs are breaking the mould by selling at prices more favourable to the buyer.

All frozen items are still available and buyers can appreciate reduced prices on party wings, B/S breasts, and tenders. The kitchen decided to cut back on promotional activity, but items are still present and are posting at lower prices. Specialty and organic items remain visible, but ease off from last week's activity levels.

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**1989**
Patent granted for the Alpha D3 metabolite

**2010**
Alura launches Alpha D3 in poultry

**2010**
Alura bring Alpha D3 to India


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# With eggs hailed as 'immunity booster', poultry farmers in Andhra Pradesh see relief

*Promotion of eggs as a rich source of nutrition and an immunity booster is helping COVID-hit farms recover faster.*

**Vijayawada:** Poultry farmers in Andhra Pradesh, who suffered heavy losses due to the COVID-19 crisis, are now hoping for revival of their fortune as eggs are being promoted as a rich source of nutrition and one of the best immunity boosters.

COVID-19 crisis, that started in March this year, has become the last straw that broke the back of the camel for the poultry sector, which has been facing slump due to steep increase in the prices of feed, especially maize and soybean. The number of birds in the poultry farms in the State has reduced to around three crore from five crore and several people have left the business.

"Nearly 30 per cent of the birds were either sold or culled, unable to bear the losses during the initial phases of the lockdown, when the adverse rumours hit the poultry farms hard and chicken was sold out at throwaway prices. Even the cost of egg fell down to Rs 1-1.5 from Rs 4.5 to Rs 5 per piece. Several poultry farmers were ready to give up at that point," said KV Mukunada Reddy, chairman of NECC (National Egg Coordination Committee), East Godavari.

East Godavari district along with West Godavari and Krishna has major share in egg production of the State, followed by Visakhapatnam, two other north coastal districts and Rayalaseema districts.

As the domestic consumption of egg in the State is between 25-30 per cent only, poultry farmers are depending more on exports. "Majority of the exports are to three States — West Bengal, Odisha and Assam — with West Bengal alone accounting for 75 per cent of the exports," said K Sateesh Reddy, market surveyor of East Godavari Zone, NECC.

COVID-19 induced lockdown had hit the egg exports from the State, due to transportation problems. Though there was exemption to essential commodities, closed markets and reluctance of transporters hit the egg exports.

"Today, we are witnessing improvement in market condition, which can be attributed to two factors — increasing awareness that eggs are a rich source of nutrition that can improve immunity levels, which increased its demand, and second factor being stabilisation of poultry feed price," P Subba Reddy, general secretary of Andhra Pradesh Poultry Federation, told TNIE.

Before lockdown, the cost of the egg fluctuated between Rs 4 to Rs 5 per egg and during lockdown, it drastically fell and at one point hit the bottom low of nearly Rs 1 per piece. However, after extensive awareness campaigns by the poultry sector, government and the recommendation of the Indian Council of Medical Research (ICMR) and other health organisations that egg is an immunity booster, the situation has started making a turnaround.

During May, the price of egg fluctuated between Rs 2.70 and Rs 3.20 per piece and in June it improved marginally and from July 15 onwards, with increasing demand and decreased production, the price of the egg increased and today it is around Rs 4.30 per piece.

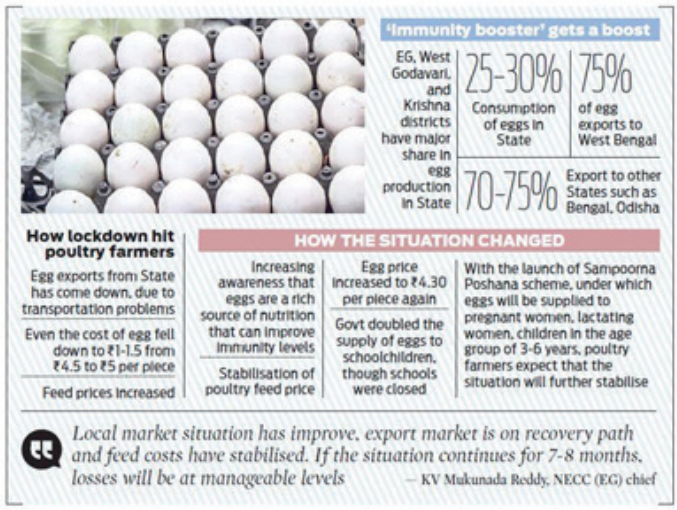
"Apart from awareness among people, reduction in the price and subsequent stabilisation of feed price also helped the farmers. Feed price, which increased from Rs 17 to Rs 27 per kg, has reduced again," Subba Reddy explained.

Though the farmers expected to see the price of an egg cross Rs 5 considering the increasing demand, the uncertain market due to increasing number of COVID cases and the consumers' reluctance to go to the market out of fear, saw the price standing below Rs 5.

One more important factor that helped the poultry farmers since July was the government doubled the supply of eggs to the schoolchildren, though schools were closed. The eggs along with other food material is being sent to the homes of schoolchildren.

From September, with the launch of the Sampoorna Poshana scheme, under which eggs will be supplied to pregnant women, lactating women and children in the 3-6 age group, poultry farmers expect that the situation will improve further.

"Local market situation has improved and the export market too is expected to be improved in the coming days. Feed costs have stabilised and if the present situation continues for another 7-8 months, losses of poultry farmers will be at manageable levels and thereafter we can expect the revival of fortunes," said KV Mukunada Reddy.



# What Does The Future Hold For The Poultry Sector ?

*Rajesh Babu, Owner of Krishna Farms*

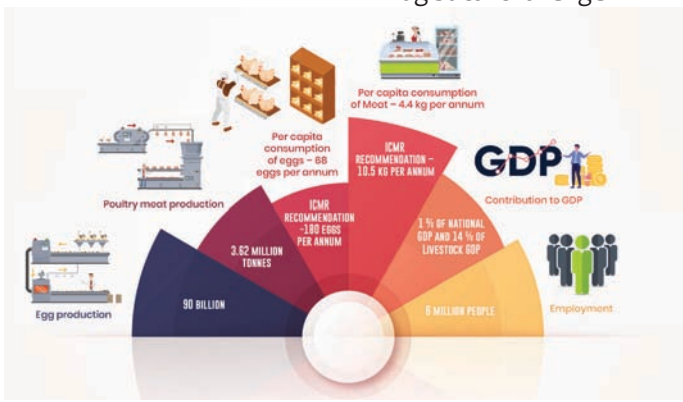
India is gradually experiencing an increase in urbanization and increasingly disposable incomes. Reflecting the drift to an increasingly urban lifestyle, the 10 major cities in the country account for over 60 percent of all poultry meat consumption. There has also been a gradual shift in eating habits, with the well-informed younger generation increasingly adopting non-vegetarian diets.

*Dr Ramdas Kambale, Director - Sales APAC and Board Member, Vetphage Pharmaceuticals*

Demographic changes happen to favor both broiler and egg industries as proteins derived from poultry are more affordable and are not associated with any religious taboos. Although consumption levels are rising, per capita consumption of meat is still 4.4 kg per annum against the ICMR recommended 10.5 kg per annum. The per capita consumption of eggs is 68 eggs per annum against the ICMR recommended 180 eggs per annum. Food processing is expected to become one of India's major industries in the coming years. The production chain is rapidly evolving with increased production and processing, better storage facilities, and evolving preferences. At present, only 10 percent of the agricultural produce is processed, resulting in a lot of wastage. The government plans to triple the sector's capacity and has also committed investments of 6000 crore rupees in mega food parks across the country. The production is becoming more integrated in the broiler sector. Meanwhile, 85 percent of all egg production is accounted for by commercial farms. The increasing demand for poultry meat and the improved organization has made India the third largest producer of eggs and the fifth largest producer of broilers.

**The benefits of processed meat**

A mature processed meat market will be beneficial to producers and customers alike. Processing technology will increase the shelf life of all meat products, which will make it easier for farmers to absorb any shocks due to the improved control over the inventory. Also, the fact that the product can be stored will shield them from unexpected crashes in prices.




With social distancing being the new normal for foreseeable future, and the need for hygienically stored meat which is not touched by hand is going to go up. Customers are going to educate themselves and start looking for traceability, t, and fresh and hygienic meat. Processed meat is the logical answer to all the above demands, and it will allow producers to adhere to the strict quality requirements. Players who can integrate themselves into a brand-driven processed meat market could gain a lot from this trend.

However, there are a number of challenges that need to be addressed if we want the industry to flourish.

**Challenges**

1. **Transportation:**

   Over 60 percent of broiler birds and eggs are produced in six major states. Birds are usually transported alive in unhygienic and inhumane conditions resulting in mortality during transport. Lack of dry processing and proper cold chain facilities make transportation of good poultry produce a logistical challenge.

2. **Licensing and Regulatory control**

   There is no regulatory authority ensuring quality standards in farms, processing and transportation in the domestic market. Licensing is done on the municipality level, and they lack the knowledge and expertise to enforce unified quality standards.

3. **Multidrug resistant pathogens**

   The rampant use of antibiotics to treat infections and promote

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**Clostridium Perfringens**
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**Staphylococcus Aureus**


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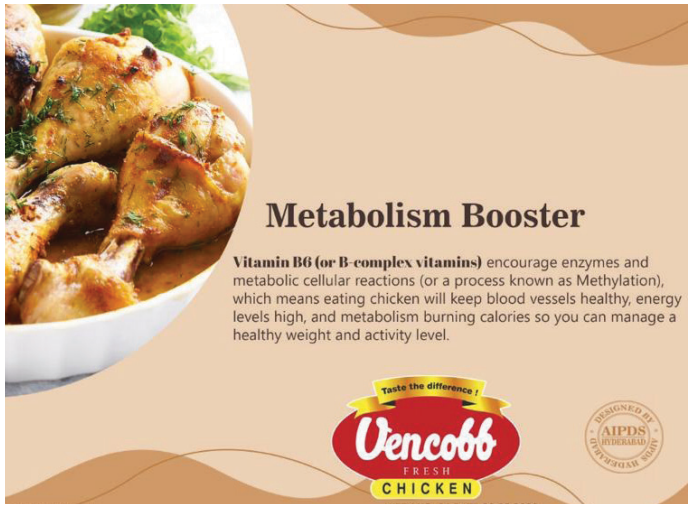
growth has led to the rise of multidrug-resistant pathogens. The industry must shift to bacteriophages and enzybiotics to minimize losses and increase productivity. Once these areas are properly addressed, it might improve the outlook for the sector.

**4. Current Crisis**

Although an increase in consumer demand was able to restore poultry products' prices, the lockdown had already affected the poultry farmers in several ways. As soon as the lockdown commenced, the sales started to plummet. It also led to disruption in transportation, which prevented the movements of poultry products and other supplies to the markets. The loss of two sales broiler cycles proved to be costly for small-time poultry farmers. The bigger producers were able to tide through tough times by channeling their sales into processed meat and other value-added products. For poultry producers who sell products to the restaurant, hotel and catering sector, the current situation is quite challenging. These outlets accounted for 40 percent of total sales before the pandemic and a lot of them still remain closed despite easing of restrictions. Full recovery of the sector is not going to happen till large public gatherings like parties, weddings, and conferences are allowed to take place again. Although restrictions are being eased in a phased manner, new hotspots continue to emerge due to which various local governments are re-imposing mobility. Meanwhile, the periodic outbreaks of avian influenza led to the recirculation of false claims that chickens are potential carriers of coronavirus. However, the temporary obstacles aside, the situation is expected to stabilize soon.




*Courtesy: Vencobb*

# Biosecurity: Protecting our flocks to sustain the supply

Safeguarding animal health is of paramount importance to any country's economy and food supply. Livestock with a clean health status is an important requirement for a country to participate in global protein markets. There are a number of emerging and reemerging animal diseases of concern that may affect the adequacy of the food supply for a growing world population and have huge implications for global trade and commerce. Unfortunately, zoonotic diseases including avian influenza keep reemerging in some specific areas of the world, causing high morbidity and mortality in poultry. In some cases, outbreaks of zoonotic disease can impact the supply chain and ultimately reduce the availability of food to consumers.

Some industries more than others still face challenges with diseases including Newcastle disease (ND), infectious bursal disease (IBD), infectious bronchitis (IBV), and infectious laryngotracheitis (ILT). In addition to the costs borne directly by protein producers, additional costs are incurred on a global level when there is a disruption in international availability of poultry meat, eggs, and / or chicks.

At Cobb, we are committed to producing and providing a safe and secure supply of poultry breeding stock to our customers around the world. Components of our biosecurity programs have been certified by independent agencies including the National Poultry Improvement Plan (NPIP under auspices of the USDA in the USA); the Poultry Health Scheme of the Department for Environment, Food and Rural Affairs (DEFRA in the UK); the Food and Consumer Product Safety Authority (Netherlands); and the National Poultry Health Program of the Ministry of Agriculture,

*Continuous monitoring and testing of our flocks are key parts of our biosecurity program and protecting our supply chain.*

Livestock and Supply (PNSA of MAPA in Brazil). These organizations conduct regular auditing and monitoring of the health programs of our breeding operations.

Regular testing is a key to a biosecurity program that has protected our supply chain from disease outbreaks for decades. A prime example is our participation in the avian influenza clean program of the National Poultry Improvement Plan (NPIP). We are certified as Avian Influenza Clean in this national plan, and all flocks are tested for avian influenza every 3 weeks. As a certified participant, this program allows Cobb to meet the avian influenza import requirements for the majority of our trading partners.

As a global company that produces genetic stock for customers around the world, we work hard to prevent interruptions to our supply chain. Cobb has pedigree, great-grandparent, grandparent production facilities, and hatcheries strategically located around the globe. We utilize a network of more than 60 distributors to ship our products. Furthermore, we have compartmentalized our operations in Brazil, the UK, and the USA following the guidelines by the World Organization for Animal Health (OIE). These measures help ensure the security and availability of our products in the event of disease, outbreaks, and other possible interruptions to our supply chain provided there is a bilateral agreement in which the receiving country recognizes the certified compartments in the exporting country.

Strict biosecurity programs are a foundation of our risk management strategy. Our biosecurity protocols exceed the requirements of most government programs, so importing officials have a high degree of confidence in our products. Exceptional biosecurity allows us to distribute breeding stock to more than 120 countries. You can learn more about our biosecurity programs at https://www.cobb-vantress.com/en_US/biosecurity/na/english/.

An important part of the supply chain is the export process. Careful planning and documentation are fundamental to deliver a quality product to international customers without delays. Our team of export specialists follows strict biosecurity protocols and works carefully to meet the unique requirements of each country, including special paperwork and/or additional testing. To make the export process more efficient, we pioneered the use of an electronic health certification system for day-old poultry in coordination with the United States Department of Agriculture (USDA). Cobb served as the first company to pilot this model in Canada and Guatemala. Since then, the program has expanded to include most countries around the world and uses partial to fully electronic processing.

There has been increased recognition of the importance of strict biosecurity practices, and we encourage every producer to focus on building and sustaining a biosecurity culture. Training farm and hatchery team members is a fundamental part of building the biosecurity culture as workers are known to be the most common source of disease transmission. Chick delivery drivers also adhere to our biosecurity protocols, allowing the delivery of products to customers in our domestic markets without the concern of disease. There is also a zero-tolerance policy in place for all team members to prevent direct contact or interaction with poultry outside the production facility. This is by far one of the most important principles of biosecurity, according to The Poultry Site, 19 August 2020.

In this integrated and dependent world, a strict biosecurity program is integral to preventing economic and supply chain disasters arising from livestock disease. Upon realizing the dangers and risks of poultry diseases in commercial poultry production systems, producers have worked to understand the cost-benefit ratio of implementing and maintaining an effective biosecurity program.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# Intestinal health in the era of NAE

The vital role the gastrointestinal tract (GIT) plays in nutrient absorption and the immune response is probably much more complex and dynamic than most of us realize. We do know, however, that maintaining good intestinal health and minimizing intestinal disruptions are critical to growth, to the health and welfare of birds and to the food safety aspects of modern-day poultry production.

This is especially true for no antibiotics ever (NAE) production systems. If digestion and nutrient absorption are compromised, an overgrowth of intestinal microbes can occur that, in turn, affect bird health and performance. Although poultry companies with NAE flocks are turning to antibiotic alternatives to promote good gut health — pre-and probiotics, essential oils, enzymes, etc. — a properly functioning GIT is essential to achieve positive results with dietary manipulations.

**Feed and water**

One of the most basic tenets for maintaining good intestinal health in NAE flocks is good quality feed and water. In fact, feed and water quality need to be superior.

I advise producers with NAE flocks to make sure they have quality feed and to make sure they never run out of feed. It takes only a few hours without feed for the gut mucosa to shift, making birds more susceptible to enteritis. Feed withdrawal stimulates mucin production by goblet cells in the intestinal mucosa. This extra mucin is then used by bacteria to irritate the mucosa and generate inflammatory reactions.

Good drinking water quality is likewise critically important for NAE flocks. Much of my extension work today is focused on well water quality for poultry farms growing NAE birds. The mineral concentration, bacterial load and pH of the water needs to be monitored. Water hardness, alkalinity and a high pH can disturb crop pH and reduce the early phase of digestion, bacteria can cause disease and threaten flock health, while a low pH can irritate the intestinal lining.

Water quality is not only important for good digestion, it can minimize microbial proliferation in water lines, nipples and drinker systems. Failure to monitor and ensure water quality on the farm can be detrimental to intestinal health and bird performance.

**Breeder health**

Something that I think too often gets overlooked in an NAE program is the key role that breeder health, nutrition and welfare plays in producing a healthy broiler chick. Feed and water quality for breeders are just as important as they are for broilers. Loose droppings and wet litter are just as bad in a breeder house as they are in a broiler house.

Eggs going to the hatchery must be CLEAN to limit the bacterial load entering the hatchery. Hatcheries must also be CLEAN if they are going to hatch quality baby chicks. Incubation temperatures are critical to chick quality at hatch. Suboptimal incubation tends to increase the hatch window by causing some chicks to hatch either too early or too late. This results in problems with development of the lymphoid tissue associated with the intestines.

**Gut disease**

I often see multiple issues at the same time on farms with NAE flocks when intestinal health is compromised by coccidiosis and necrotic enteritis. Irritated intestinal linings often result in loose droppings and excess feed passage, in turn leading to wet floors. Excess feed passage results in a poor growth rate and high feed conversion ratios. Wet floors can lead to increased ammonia levels and eye irritations, increased footpad issues and poor paw quality.

For intestinal health to be maintained in today's NAE era, coccidiosis and necrotic enteritis must be controlled. In NAE programs that do not allow anticoccidal medications, this is done mainly with coccidiosis vaccines and improved litter management.

In addition, within the GIT, there are numerous interactions taking place between the bird's intestinal cells, bacterial cells within the intestines and feed components. Hopefully, the bacterial population forms a protective lining over the gut wall, thus restricting or preventing growth of pathogenic bacteria such as Clostridium perfringens (the troublemaker responsible for necrotic enteritis), Salmonella and Campylobacter. This is often called competitive exclusion but what it really means is that the good bugs, for the most part, fight off the bad bugs.

**Fight the problem, not the consequences**

There are many times when we get the cart before the horse when it comes to intestinal health. When we have an intestinal health issue such as coccidiosis or necrotic enteritis, we tend to focus on controlling intestinal disease. This is understandable because we see coccidiosis or necrotic enteritis and realize we have a problem.

However, while coccidiosis and necrotic enteritis are certainly a problem, they are not the problem. The real problem is often an excess of nutrients that caused a proliferation of microbes, leading to coccidiosis and necrotic enteritis.

In the past, small amounts of antibiotic reduced the number and diversity of certain microbes and created enteric conditions with fewer bad bacteria. As a result, intestinal health issues were better held in check. Today, antibiotics (for the most part) are gone and microbes are better able to proliferate and cause problems. However, microbes have always been here and will continue to be here.

Our first concern should be addressing the reduction in digestion or the excess in undigested nutrients in the GIT that is allowing the microbes to upset the intestinal equilibrium. Why is this happening and how do we fix it?

**Balancing act**

Intestinal health relies on maintaining a balance between the host, the microbes,

*Contd on Page 29*

# Weekly global poultry digest: broiler prices growing firmer

**US broiler market at a glance**

Whole broiler / fryer prices are trending steady to firm for all sizes, said USDA in its latest weekly poultry report. Offerings of all sizes are light to moderate for current trade needs. Retail and food service demand remain light to moderate for beginning of the month business. Processing schedules are normal to reduced with a limited amount of plants running Saturday shifts. Floor stocks are adequate. Market activity is slow to moderate. In the parts structure, prices are trending steady to firm for boneless skinless breasts, firm for tenders, and steady for dark meat items and wings. Supplies of tenders are balanced to instances tight with premiums noted. Boneless skinless breasts are light to moderate, and dark meat cuts are moderate to heavy. Wings are irregular, with smaller sizes in the longest position, and all other parts are moderate. Market activity for parts is slow to moderate. In production areas, live supplies are moderate to heavy. Weights are mixed, but mostly desirable to light.

In the latest USDA broiler hatchery report, broiler-type eggs set in the US were down 2 percent in the latest weekly hatchery report. Weekly programmes set 230 million eggs in incubators during the week ending 1 August 2020, down 2 percent from a year ago. Average hatchability for chicks hatched during the week in the US was 82.4 percent. Average hatchability is calculated by dividing chicks hatched during the week by eggs set three weeks earlier.

Broiler growers in the United States weekly program placed 187 million chicks for meat production during the week ending 1 August 2020, down slightly from a year ago. Cumulative placements from the week ending 4 January 2020 through 1 August 2020 for the United States were 5.77 billion. Cumulative placements were down slightly from the same period a year earlier.

**China officials detect COVID-19 on chicken wings from Brazil**

Officials in the southern Chinese city of Shenzen said a sample of frozen chicken wings imported from Brazil has tested positive for COVID-19. The virus was detected from a surface sample from the chicken wings as part of routine screenings that have been underway since June. Shenzhen health authorities said everyone who may have come in contact with the contaminated food product has tested negative for the virus. It is hard to tell where the frozen chicken got infected, said a China official at a Brazilian meat exporter. Most scientists continue to say it is unlikely the virus causing COVID-19 can spread from frozen food.

**China will honour Phase 1 trade deal, central bank chief says**

Vice-Premier Liu He is expected to hold a video conference on 15 August with US Trade Representative Bob Lighthizer and Treasury Secretary Steven Mnuchin to discuss the trade deal reached in January. Central bank governor Yi Gang said Wall Street trading firm will be allowed to have exclusively owned brokerage operations in China. China's promised purchases of US farm products have picked up significantly in recent weeks, but are still far off the pace needed to tally $ 36.5 billion during the first year of the accord.

## Intestinal health in the era of NAE

*Contn from Page 28*

the intestinal environment and dietary compounds. When intestinal health is optimal, we see near complete digestion of the feed and absorption of feed nutrients. When intestinal health is suboptimal, malabsorption and a gut imbalance are likely because of incomplete digestion. This can result in an overgrowth in the microbial population and a shift away from beneficial bacteria. So now, the bad bugs are fighting off the good bugs. When I necropsy birds, I pay special attention to the GIT both inside and outside. Even if the problem is a respiratory issue or an Escherichia coli infection and not an actual intestinal health issue, I still closely examine the GIT. I look at the crop, the proventriculus and the gizzard. In the intestinal tract, I'm looking for signs of coccidiosis and necrotic enteritis. I'm looking to see if the intestinal walls are thin. I look for worms. I check the viscosity of intestinal contents, the ceca and the color of the intestine itself. Anything out of the ordinary is a red flag.

Obviously, there are a wide variety of factors that can affect intestinal health. Besides feed and water, hatchery conditions and egg pack cleanliness, they include farm management, the housing environment as well as biosecurity on both breeder and broiler farms. We must improve in all of these areas if we expect to have successful NAE programs in the future.

Compared to just 3 to 5 years ago, we have a much better understanding that any negative impact on gut health — disease related or not — negatively affects performance and welfare. Poultry companies are learning to overcome challenges associated with NAE production by refining their nutritional programs, adopting the latest technologies and by altering animal husbandry practices.

Converting from conventional to NAE production can be done although it comes with reduced efficiency and increased production costs. Sustaining NAE production is also possible — but it's going to largely depend on how well we understand and manage intestinal health.

# T. Natesan Promoted as Managing Director of Virbac India

**Mumbai:** Mr T. Natesan is now promoted as the Managing Director of Virbac Animal Health India Pvt Ltd. Mr Satish Pasrija the leader who has vision, courage, humility and a brilliant strategic mind to plan and catalyze cooperation amongst all team members for perfect execution, was retired as the Managing Director of Virbac India on 30 June 2020.

Natesan joined erstwhile GlaxoSmithKline Pharmaceuticals Ltd in May 1990 as Business Officer based at Coimbatore. He was promoted as Area Sales Executive in the year 1993 and Area Sales Manager in 1997 based at Coimbatore. In July 1999, he was promoted as Regional Business Manager based at Bangalore to take care of the states of Tamil Nadu, Karnataka, Andhra Pradesh and Kerala. During his tenure under his leadership, the region was qualified twice for All India Best Region Award.

**Excellent management practices**

Natesan established excellent sales management practices and under him, he developed various managers who are currently heading the regions successfully.

Based on the performance and internal selection process, in the year 2008 he was promoted as Sr. Regional Business Manager based at Coimbatore. After 20 successful years in Virbac India, from Business Officer to Sr. Regional Business Manager, Mr Natesan was promoted as General Manager of Virbac Vietnam in January 2011, and subsequently as Asia Regional Director since January 2018. During these nine years, he has been instrumental in transforming Virbac organisation in Vietnam, and has made significant contributions in establishing or supporting new and successful business models in Asia.

To continue the successful journey of Virbac India, in these times of significant changes, both in the market and in our organisation, Mr T. Natesan was elevated from Bangkok Regional Office to Mumbai Office, as Virbac India's Joint Managing Director effective April 01, 2020 and consequently he took the charge as a Managing Director effective 1st July 2020, informed a note from the company.

He brings with his overall 33 years of core Animal Health Industry experience with working in India and South East Asia, Taiwan and Korea on different business models with successful transformation of the business and experience of working with different people, culture, market dynamics and different challenges.

# HatchTech and Willmar Poultry Innovations enter into strategic distribution partnership for HatchCare Turkeys

**September 2020, The Netherlands:** HatchTech, a leading manufacturer of incubation equipment, and Willmar Poultry Innovations (Willmar), a world-leading innovator of turkey-related products and operations, are collaborating on substantial research and development efforts to apply market-leading chicken HatchCare products to hatching day-old turkeys (so-called "poults"). HatchCare is a unique and widely-adopted hatchery system where day-old birds hatch under optimum, and uniform temperature conditions, and are provided with fresh water, feed, and light as soon as they hatch.

Years of investments and thorough testing of early feeding potential for turkeys has revealed positive results. Willmar is now in the process of extending their research and development facilities, adding HatchCare systems to their process, to increase testing capacity and enable large-scale field trials. Willmar and HatchTech will work in close partnership to monitor outcomes, gather data, and measure the performance and bird-health impact of these systems. Due to the expectation of a positive outcome of these efforts, Willmar has become the exclusive distributor for the sales of HatchCare for Turkeys in the United States of America and Canada.

Joost ter Heerdt, Commercial Director of HatchTech, sees this partnership as a positive move for both companies: *"We're excited at the prospect of HatchCare entering the turkey market through this agreement with Willmar. Their Turkey knowhow and our expertise with fresh water and feed for early birds will make this a great partnership. We believe all parties involved will benefit from this, especially our future customers."*

Mr Rick Huisinga, CEO of Willmar has a similarly positive outlook: *"Our small-scale tests with early feeding on turkeys have been extremely positive. Now it's time for the next big step in our product development cycle; gathering full-scale data. HatchTech has developed the best solution in the world to deliver feed, fresh water, and an ideal environment to newly hatched chicks, and we believe the same potential exists in poults. The future of HatchCare for Turkeys is bright!"*

Both companies are aware of the tremendous potential that fresh water and early feeding will deliver for day-old Turkeys. At the same time, they are fully aware of the fact that the genetics and behaviour of a day-old chicken and a day-old turkey are significantly different. It will be critical that they develop a close collaboration between their respective teams, including sales support, coaching, product modifications, updates, and training.

*"There is a lot of similarity between our companies. Innovation based on scientific research is one of our key pillars and it's great to work with a company such as HatchTech that has a similar drive. Their attention to quality and detail is key to our partnership" adds Mr Jonathan Huisinga, Willmar's Research & Development Director, "I look forward with great confidence to the first results."*

**About Willmar:**

*From left to right: Jonathan Huisinga, R&D Director of Willmar and Rick Huisinga, CEO of Willmar.*

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*From left to right Joost ter Heerdt, Commercial Director at HatchTech and Tjitze Meter, Founder and CEO of HatchTech.*

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# Poultry can become big industry in Kashmir if Govt supports it

***Poultry is a growing industry in Kashmir and if government extends support through subsidy for land, construction of poultry sheds and ease of movement of chicks and grown up birds, this industry can grow big in the state, said Mr Ghulam Muhammed Bhat, President, Kashmir Valley Poultry Farmers Association. Poultry Fortune Editor M. A. Nazeer had an interview with Mr Ghulam Muhammed Bhat over telephone on September 11. Excerpts:***

**Ghulam Muhammed Bhat,** *President, Kashmir Valley Poultry Farmers Association*

**Buchpora, Srinagar:** The situation of people in Kashmir is very bad and with the lockdown owing to Covid-19 pandemic, the life of people in the valley has become worst. Poultry farming is the main activity here, said Mr Ghulam Muhammed Bhat, President, Kashmir Valley Poultry Farmers Association (KVPFA) and a leading entrepreneur in poultry industry in the state of Jammu & Kashmir.

No one in the government listens us and poultry farmers are in distress position today. Government announced that movement of vehicles with essential goods like Eggs and Chicken should be allowed freely, but in practice the government officials like traffic police are troubling us. In the first week of September 2020 about three lakh Broiler chicks were died as the traffic police stopped chicks vehicles for over 36 hours, he stated.

### J&K Produces 90 lakh Broilers a month

While Jammu produces 30 lakh broilers a month, the production of broilers in Kashmir is 60 lakh birds a month with about 14,000 poultry farmers in the state. It has 95 % broiler farming and 5 % layer farming. On an average the farms have 5,000 broilers growing capacity each and a few farmers have 20,000 broilers rearing each. The farm gate price of live broilers is INR 70 a kilo presently. All the broilers produced in the valley are consumed locally.

As the chicks have to travel mostly from Haryana and Punjab there is high transit mortality due to long distance.

According to KVPFA President G. M. Bhat and General Secretary Mr Farook Ahmed Dar, poultry farmers of the state want industry friendly poultry policy. We are happy to say that Mr Navin Kumar Choudhary, Principal Secretary to the Government, Animal and Sheep Husbandry Department, Jammu & Kashmir is very helpful to poultry farmers and the stakeholders of the industry in the state, said the President.

G. M. Bhat said, Poultry is a growing industry in Kashmir and if government extends support through subsidy for land, construction of poultry sheds and ease of movement of chicks and grown up birds, this industry can grow big in the state.

### How he took up poultry business

It was his father who started poultry casually in 80s at Buchpora Srinagar. Bhat was a school going boy then, and his father used to ask him to get 100 chicks from Government Hatchery Hariparbhat Srinagar which he carried on cycle. After a couple of years the farm jumped to around 300 chick capacity in 1986. It was a big achievement those days as people were not so much attracted towards farm Chicken (broiler).

At that time there were 50 to 60 poultry farms and almost all were in Srinagar city. Gradually he got involved more and more in this set up and brought the first hatch. Unfortunately, when it was ready to be sold, rates slashed down. But with the encouragement of seniors he sold the birds himself and succeeded. He witnessed a tough time in the beginning.

We reached to 1200 chick capacity and then established a farm for 2000 chicks in our premises at Buchpora Srinagar. Today, Alhamdulillah, I grow more than 30,000 chicks in our own farm. We got involved in poultry feed as well and have a factory for the same at Industrial Estate Zakura, Srinagar, said G. M. Bhat.

**How things changed for Kashmir poultry industry**

In 1988, poultry farmers in Kashmir had reached a production of more than 15% of its consumption while more than 80% used to come from outside Kashmir. It was tough job to get day old chicks from outside.

**Reasons for increase in poultry consumption**

Eggs and Chicken meat are easily available, economical and good protein source, and are safe and easy to cook. Poultry covers a wide base - you have farmer, feed manufacturer, dealers of medicines and vaccines, skilled men like cutter, lifter etc. At present approximately 300,000 people are involved in this industry in Kashmir province alone.

We have very enthusiastic farmers who started on their own. We approached government for subsidy for construction of shed when the farmer has already invested in terms of land. Authorities argued that as per government policy there is no subsidy on construction. I as president of KVPFA argued that you give other industries land on lease, subsidy on machinery that usually costs 50 to 60 lakh rupees. Here in poultry, we do not need much of machines for the farms. Feeders, generators etc can cost maximum upto INR 10 lakhs. We need loan on agriculture pattern, subsidy on construction of building, insurance etc, he said.

**Area wise status of poultry in Kashmir**

15 years ago farm poultry was mainly restricted to Srinagar only. Due to congestion in the city, farming got shifted to outskirts and rural areas and today you find it all over Kashmir. Pulwama is the leading area for poultry farming. If shortcomings are addressed, this sector will turn into a major revolution in Kashmir economy, Bhat says.

**Segments of poultry sector**

Poultry is like elephant on four legs or a bus with four tyres, if all are normal, only then it will be a smooth ride. The four pillars of poultry industry are:

1. Hatchery (day old chicks producer)
2. Feed, Vaccines, Medicine etc manufacturer
3. Poultry farmer (base of poultry industry)
4. Lifter / cutter / marketing.

*Farooq Ahmed Dar,*
*General Secretary, KVPFA*

As on date all three components are getting full industrial benefits from government. It is only the poultry farmer who is at risk and has been neglected despite huge involvement and investment for reasons best known to policy makers, Mr Bhat stated.

**Issues in marketing of poultry products**

Fluctuation of prices is the major problem, sometimes it is Rs 150 per kg and at times Rs 80 per kg or even less. Rates are not fixed in terms of investment, cost of production and profit margin etc. Even rate of day-old chicks varies from 8 rupees to 55 rupees per chick. Here it is demand and supply that fixes the rates and at times it cripples the farmers. Food and Supplies fixed the rate at Rs 110 per kilo. We sold it at Rs 75 per kilo; farmer is in losses.

**Expectations from authorities**

KVPFA president appealed to the government to ensure that this sector is not in losses. In this era of unemployment, poultry sector is providing employment to lot of people. This sector has potential to expand even more. Government has to devise a policy that ensures the growth of poultry sector in Kashmir.

**Experts services needed**

Any industry running on losses will collapse for sure. This industry needs to be attended by experts so that well set plan is formed for its smooth operation. We need Kisan cards, insurance cover and mandis where we can sell our produce. Let us fix the rates as is the practice every where. If these issues are attended, Kashmir poultry will give livelihood for 6 to 7 lakh people.

**Govt's proposal for Poultry Parks**

Government proposes Poultry Estates or Poultry Parks with side by side buildings for farms that is seen no where in the world and it will never be successful because poultry is highly vulnerable and dangerous infections like RKD, CRD, IB infection etc. If one farm catches infection, it will spread to all as they will be lying close by. We have a suggestion to demarcate land in far flung areas that may be non fertile rocky with less water. Give 5 kanal land (between two farms). There should be electricity, roads, drainage etc for hygiene.

In the approved Poultry Policy government promised us land at 5/6 places where we can sell our own products. We appealed to the authorities to immediately release funds for the same so that we can establish our outlets there with small godowns and sell our products.

Normally a small scale unit holder is getting land on lease and then on average the equipment etc would cost upto Rs 70 lakh investment where he is getting subsidy as well.

On the other hand, as per government policy requirement, a poultry farm with 10,000 chicks capacity needs around 10,000 sqr ft space for chicks (1 sqr ft per bird). Then there is a need of office, storage facility etc which comes upto 15,000 sqr ft requirement. This needs minimum 5 kanal land and if you establish it in far end places that will go upto Rs 70 lakh for cost of land. In addition 15,000 sqr ft space means Rs 1.5 crore and then equipment etc around 25 lakh rupees. It approximately makes Rs 2.5 crore investment. This investment needs to be given due consideration.

To a question G. M. Bhat said, winter or cold weather is not a problem for poultry. We need facilities, maintain temperature and look at humidity factor as well. Continuous supply of electricity, constant voltage, exhaust fans etc will help.

**Feed supply**

To a question on poultry feed manufacturing locally, he said, we grow around 45 lakh birds here. On an average one bird consumes 2.5 kg feed, that way there is a huge scope for the feed sector. We get raw material from outside for a little share of feed that we manufacture here. Right now 95 % of feed is imported from outside, only 5 % from here.

**Scope for Hatchery**

According to Bhat, there is good scope for hatcheries in Kashmir, more than 95 % of day old chicks are brought from outside. People should invest here, it is a wide open choice. We will get fresh stock which is not stressed. We need approximately 50 lakh broiler day old chicks per month. We may even go for an integrated poultry activity.

**Egg Marketing**

Egg market in Kashmir has huge opportunity and it is 100 % imported from outside. We need to grow layer birds for 6 months before they start laying eggs. This is a virgin area and people can invest here in this sector and there is a great potential.




# Save Poultry Industry in Kashmir

*-- Ghulam Muhammed Bhat, President, Kashmir Valley Poultry Farmers Association appeals to the Kashmir State Government.*
*Below is the text of KVPFA letter to the Government*

The Hon'ble Commissioner,
**Animal & Sheep Husbandry Department,**
Jammu & Kashmir.

**Subject:** *Please save Kashmir poultry industry from further losses.*
*Do not stop Day Old Chicks vehicles at Batal Mood Udhampur, Jakhani Chowk, Udhampur and upto Banihal.*

Respected Sir,

With due respect and reverence, it is well known to you that Kashmir poultry farmers are in tremendous financial pressure because of too less rates of broilers for which we are in constant touch with the concerned veterinary department as well as with your good-self to correct rate system, so that farmers may be saved from further losses.

As Kashmir poultry farmers are already under heavy financial stress because they are being compelled to sell their product on losses, we are in a process to solve this problem. Unfortunately, another complicated problem started which is as under that from last few days day old chick vehicles which are coming from Haryana and Punjab are being deliberately stopped at Batal Mood Udhampur, Jakhani Chowk Udhampur, Ramban, Ramsu etc areas because of unknown reasons, due to which chicks are dying in huge quantity and remaining chicks are getting full stress. So, one side dealers are compelled to give huge losses and on the other side farmers too are being compelled to face huge losses due to stressed chicks.

Please tell us what is our crime ? It is again requested to you hon'ble sir to please pass on immediate and necessary instructions to traffic officials convey them not to stop chick vehicles and other poultry vehicles on highway (batal chowk udhampur to banihal), so that we may not face more problems and losses. If things continue like this, the livelihood of more than 3 lakh people are in danger. Please help us.

Thanking You,

Yours Sincerely,

Ghulam Muhammed Bhat,
President,
Kashmir Valley Poultry Farmers Association,
Buchpora, Srinagar,
Kashmir – 190 020.

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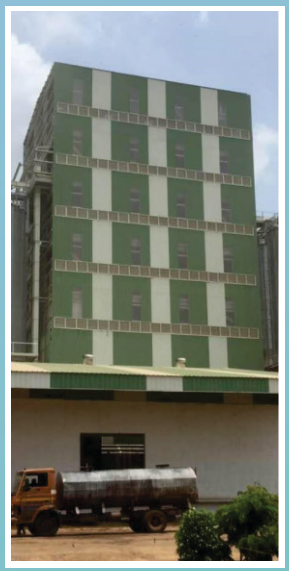

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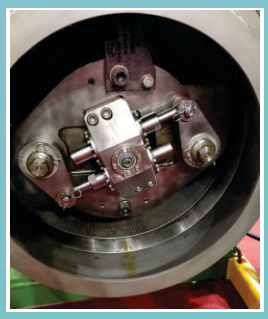

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# Optimizing utilization of Fats & Oils in Poultry Nutrition

**Highlight Points**

Fats and Oils have been used by the poultry industry around the globe as a supplemental dietary energy source in poultry feed to yield higher levels of metabolizable energy at an economically justifiable price. Hence, understanding fats/oils and their digestion as well as absorption from poultry gut is a most important factor for optimizing the utilization of fats and oils to provide higher level of metabolizable energy to birds. Supplementation of exogenous emulsifiers (more hydrophilic in nature) plays major role to optimize utilization of fats and oils from poultry gut. Some synthetic emulsifiers like GPEGR/PEGR (Glyceryl Polyethylene Glycol Ricinoleate) are more capable than Lecithin based emulsifiers in reducing the feed cost by their energy saving effects.

**By Dr Sandeep Gavali, Dr K.P. Kale, Dr Sunil Nadgauda, Dr Parag Mahadik and Dr Sudhir Kale**
Venky's India Limited, Pune

As per current scenario, oil is one of the major source of energy in poultry feed for fulfillment of required energy levels.

According to Baião NC and Lara LJC (2005) the term fat (animal or vegetal) is used as a synonym for lipid in the human food as well as in the ingredients for animal nutrition. The addition of fat to diets, besides supplying energy, improves the absorption of fat-soluble vitamins, diminishes the pulverulence, increases the palatability of the rations, and increases the efficiency of the consumed energy (lower caloric increment). Furthermore, it reduces the passage rate of the digesta in the gastrointestinal tract, which allows a better absorption of all nutrients present in the diet.

Considering importance of fats and oils in poultry feed, we want to discuss following important points:

- **Use of Fats and Oils in poultry diet**
- **Emulsifier and their usage in poultry feed**
- **Field trial reports of the emulsifier (Emulso-V)**

**Fats and Oils in poultry feed:**

According to Murugesan G. R., historically, starch (specifically maize/corn starch) has been the primary energy source for poultry feed. As maize is now being increasingly utilized in ethanol production, the cost and availability of starch as a low-cost energy source is being adversely affected. This makes dietary energy the costliest component in poultry feed. Energy costs will continue to drive grain prices, as more grain is diverted towards bio-fuel production, impelled by high crude oil prices. While continual usage of maize increases dietary costs and reduces margins, reduction of dietary energy might result in either slowed growth rates and/or reduced feed efficiency. Another option, however, is to use supplemental fats and oils to increase dietary energy content. This would allow for continued performance and give the flexibility to poultry producers when pricing ingredients.

Fats and oils have been used by the growing poultry industry around the globe as a supplemental dietary energy source in poultry feed to yield higher levels of metabolizable energy at an economically justifiable price. Hence, understanding fats and their metabolism is a critical factor when it comes to efficient utilization of the dietary energy contributed by fat/oil supplementation.

For understanding better usage of fats and oils and to increase its utilization, knowledge of the following points is essential:

1. **Selection of fats and oils**
2. **Quality of Fats and Oils**
3. **Broiler's Diet**
4. **Digestion and Absorption of fats and oils**

**1. Selection of fats and oils:**

**Introduction of fats and oils:-**

The term "fat" is used as a synonym for lipid and refers to triglycerides or triacylglycerols of several profiles of fatty acids. Oils are esters of glycerol as with fats; however, oils are liquid unlike fats which are solid at room temperature (Lehninger et al., 2008).

Fats and oils both are composed of triglycerides (having three fatty acids with one glycerol backbone).

**Fatty Acids –**

a) Short Chain Fatty Acids – Having 2 to 5 numbers of carbon atoms in their structure. For e.g. Propionic acid, Butyric acid.

b) Medium Chain Fatty Acids – Having 6 to 12 numbers of carbon atoms in their structure. For e.g. Capric acid, Caprylic acid.

c) Long Chain Fatty Acids – Having 13 to 21 numbers of carbon atoms in their structure. For e.g. Palmitic acid.

d) Very Long Chain Fatty Acids – Having above 21 numbers of

carbon atoms in their structure.

**Saturated and Unsaturated Fatty Acids –**

a) Saturated Fatty Acids – Having no double bond in their carbonic chain structure, high melting point than unsaturated fatty acids, less polar and available in animals fats in large quantity.

b) Unsaturated Fatty Acids – Having one or more numbers of double bonds in their carbonic chain structure, less melting point than saturated fatty acids, more polar, cis as well as trans type of fatty acids, available in vegetable oils in large quantity.

**Triglycerides –**

**A)**

a) Simple Triglycerides – Having same types of fatty acids attached to their glycerol backbone.

b) Mixed Triglycerides – Having different types of fatty acids attached to their glycerol backbone.

**B)**

a) Triglycerides with Saturated Fatty Acids – Having all three saturated fatty acids in their structure.

b) Triglycerides with Monounsaturated Fatty Acids – Having one double bond in their unsaturated fatty acids structure.

c) Triglycerides with Polyunsaturated Fatty Acids – Having two or more number of double bonds in their unsaturated fatty acids structure.

**Fats –**

Fats are having more number of saturated fatty acids (no double bond in their carbonic chain structure), fats are less polar than oils and having high melting point, hence they are solid at room temperature. They are made up of simple or mixed types of triglycerides with more number of saturated fatty acids.

**Oils –**

Fats are having more number of unsaturated fatty acids (one or more numbers of double bond in their carbonic chain structure), high polar than fats and having less melting point than fats, hence they are liquid at room temperature. They are made up of simple or mixed types of triglycerides with more number of unsaturated fatty acids.

With considering above classification of Fatty Acids, Saturated and Unsaturated Fatty Acids, Triglycerides and Fats and Oils, selection of best fats and oils are as per below:

I. Oils are preferred than fats as they are having more numbers of unsaturated fatty acids.

II. The increase in the length of the carbonic chain of saturated fatty acids increases the melting point of the fat and the presence of the double bond decreases the melting point. The longer is the chain, the smaller is the number of double bonds, and less soluble it will be in water. The geometry of the double bond also influences the melting point.

III. Trans fatty acids have higher melting point than their cis isomers.

IV. All types of unsaturated fatty acids are more preferable than all types of saturated fatty acids.

V. Long chain unsaturated fatty acids can provide more metabolizable energy to the birds than all other fatty acids and also helps to form more micro micelle for better absorption of oils.

VI. Triglycerides with Polyunsaturated Fatty acids (Cis type of long chain unsaturated fatty acids) can provide more metabolizable energy to birds than Triglycerides with Monounsaturated Fatty acids and Saturated Fatty Acids.

VII. U/S ratio (Unsaturated/Saturated) of fats/oils inclusion in poultry diet should be at least 4:1 for better utilization and absorption of fats/oils.

VIII. Additionally, there are some points need to consider during selection of fats/oils for poultry diet inclusion rather than above mentioned criteria for better utilization and prolong life of fats/oils.

**2. Quality of Fats and Oils –**

The quality of fats/oils is most essential part of selection of oils/fats for poultry diet and to maintain the good quality of selected oil/fat is also important for it's prolong life and it is depends on following points –

**I. Oxidative Rancidity** - Polyunsaturated fatty acids are more prone to oxidative reactions or to form oxidative rancidity as they are having more number of double bonds. Hence for avoiding the same we need to use some antioxidants. e.g. natural antioxidants (vitamins A and E), the synthetic α-tocopherol and other phenolic antioxidants (BHA Butyl hydroxyanisole, BHT - Butyl hydroxytoluene, TBHQ tert-butyl-hydroxyquinone, PG 3,4,5-Trihydroxybenzoic acid propyl ester) and the non-phenolic antioxidants (Ethoxyquin Ethox, 6 ethoxy-1,2 dihydro-2,2,4 trimethyl quinoline) are effective in inhibiting oxidation. BHA and BHT are effective in stabilizing animal fats. TBHQ is effective in stabilizing both animal and vegetal fats. The mixture of TBHQ with BHT and/or BHA is widely used in the control of oil and fat oxidation. PG is the most adequate to stabilize animal fats (Butolo, 2001; Papas, 1993 cited by Gómez 2003).

**II. MIU (Moisture, Impurities and Unsaponifiable)** – Max level should be 1%.

**III. Acidity (Free Fatty Acids)** – It has been suggested that for each 1% of increase in acidity, 10 kcal of metabolizable energy is lost per kg of diet/ ingredient (Barbi & Lucio, 2003).

**IV. Saponification value** – It is always higher when triglyceride chains are shorter.

**V. Peroxide value** – Max. 20 meq is accepted per kg of oil/fat (or depends on the nature of fatty acids available in oil/fat).

**VI. Iodine value** – It is considered better for stability of fats/oils. Iodine value between 70 and 120 or above (or depends on oil/fat).

**3. Broiler's Diet –**

Total requirement of energy is high in broiler birds. For fulfillment of their energy requirement oil/fat is the best source than other carbohydrate and protein rich sources as heat increment during fatty acids conversion from oil/fat is lesser than carbohydrate and protein.

Generally following broiler diet specifications are followed in the poultry industry for better broiler performance.

**Table 1. Broiler's Diet**

| | Pre Starter Feed | Starter Feed | Finisher Feed |
|---|---|---|---|
| Feed Required (In Grams) | 400 | 1200 | Balance |
| Total ME (Kcal) requirements | 3000 | 3150 | 3250 |
| Ether Extract % | 3.00 to 4.00 | 4.00 to 5.50 | 6.00 |
| Oil % | 1.50 to 2.00 | 2.00 to 2.50 | 2.50 to 3.50 |

As per physiology of birds they are having capacity to utilize or digest limited quantity of oils/fats when we are offering energy in the form of oils/fats. Endogenous emulsifiers are not much efficient in the digestion of fat (Dr Rajesh Singh, 2019).

**4. Digestion and Absorption of fats and oils**

**Fat digestion**

The digestion and absorption of fat in the chicken occurs mainly in the small intestine (Scott et al., 1982). The presence of digesta, with intact dietary fat in the duodenum, stimulates cholecystokinin secretion, which in turn induces the secretion of pancreatic enzymes and bile (Friedman and Nylund, 1980). While bile salts emulsify fat along with co-lipase providing more surface area for the enzymes to act upon, lipase hydrolyses the emulsified triglycerides on sn-1 and sn-3 positions to release Monoglycerides and free fatty acids (Mu and Hoy, 2004). Cholesterol esterase hydrolyses cholesterol-fatty acid esters into cholesterol and free fatty acids (Mu and Hoy, 2004). Also large amounts of endogenous phospholipids enter through bile, predominantly Phosphatidylcholine in addition to dietary phospholipids. Phospholipase A2 cleaves phospholipids at the sn-2 position to release lysolecithins and free fatty acids (Scott et al., 1982).

**Fat absorption**

Bile salts are biological surfactants as well as detergents, which are amphipathic i.e., they have both hydrophobic and hydrophilic ends (Mu and Hoy, 2004). When the concentration of bile salts in the lumen is at or above "critical micellar concentration," they arrange themselves on the surface of lipid digestion products, with their hydrophobic ends turned inward and hydrophilic ends turned outward (Free Fatty Acids, Monoglycerides, Cholesterol and Lysolecithin), forming "Mixed Micelles" (Garrett and Young, 1975). **Long-chain unsaturated fatty acids have greater ability to form micelles, they may act synergistically in the absorption of saturated fatty acids when mixed with them (Ferreira, 1999).** To get their lipid content absorbed actively by enterocytes, these mixed micelles can pass across the unstirred water layer, which bathes the enterocytes (Iqbal and Hussain, 2009). Inside the enterocytes, the MG, free fatty acids are re-esterified to form triglycerides and together with cholesterol, lipoproteins and lysolecithins, are assembled into portomicrons (Stevens, 2004). Around 15% of fatty acids present in the lumen are catabolized in the mucosal epithelium towards the maintenance energy requirement (Noy and Sklan, 1996). Short chain fatty acids and free glycerol are absorbed directly through passive uptake (Gropper et al., 2008). The portomicrons, short chain fatty acids and free glycerol are transported through the portal venous system to the liver, since unlike mammals the lymphatic system of the birds is not well developed (Bensadoun and Rothfeld, 1972).

**Role of Lipoproteins:**

**Very low density lipoproteins (VLDL)** – carry triglycerides from the liver to the extra hepatic tissues like the ovary (for egg yolk synthesis) or muscle (for energy) (Phan and Tso, 2001).

**High-density lipoprotein cholesterol (HDL-C)** – "Good cholesterol" because HDL-C takes up excess cholesterol and carries it to the liver for removal.

**Low-density lipoprotein cholesterol (LDL-C)** – "Bad cholesterol" because it deposits excess cholesterol in walls of blood vessels.

**Difficulties in first few days of life:**

Secretion of bile acids/salts and pancreatic lipase enzyme are less in first 14 to 21 days of life. Hence, external supplementation of emulsifier is essential for better digestion and absorption of fats / oils.

According to Carew et al. (1972) the capability to absorb corn oil increased from 84% to 95% from the first to the second week of age and absorption of tallow has increased from 40% to 79%.

**We have done one trial on broiler's based on above hypothesis using Emulso-V (PEGR based emulsifier from Venky's) and following are our findings:**

**Table 2. Trial of Emulso-V on broiler birds**

| Parameter | Control (Normal Diet - 32.80 Kcal ME per kg of feed) | Treatment – 1 (Control diet + Emulso-V @ 250 g /MT Feed) | Treatment – 2 (Control diet + Emulso-V @ 300 g /MT Feed) |
|---|---|---|---|
| Avg. BW (Kg) | 0.380 | 0.397 | 0.402 |
| FCR | 1.289 | 1.266 | 1.225 |
| CFCR | 1.694 | 1.666 | 1.625 |
| Cum. Mort % | 1.233 | 1.100 | 1.467 |
| Mean Age (Days) | 14 | 14 | 14 |

* Note - Energy level is reduced by reducing 6 kg soya oil per ton of feed.

**Addition of emulsifier showed better weight gain as compared to control diet. Exogenous or external supplementation of emulsifiers is most important in broilers for better digestion and absorption of fats/oils during early life.**

**Emulsifier:**

**Emulsifier** - A substance that stabilizes an emulsion and having water loving head (Hydrophilic) and an oil loving tail (Hydrophobic).

**Emulsion** – It is a mixture of two or more immiscible liquids. They are having two types oil in water emulsion and water in oil emulsion.

**HLB Value (Hydrophilic-Lipophilic Balance)** – HLB is the tool or scale which is used for the evaluation of the type of emulsifiers. HLB value ranges between "0 to 20" for different emulsifiers.

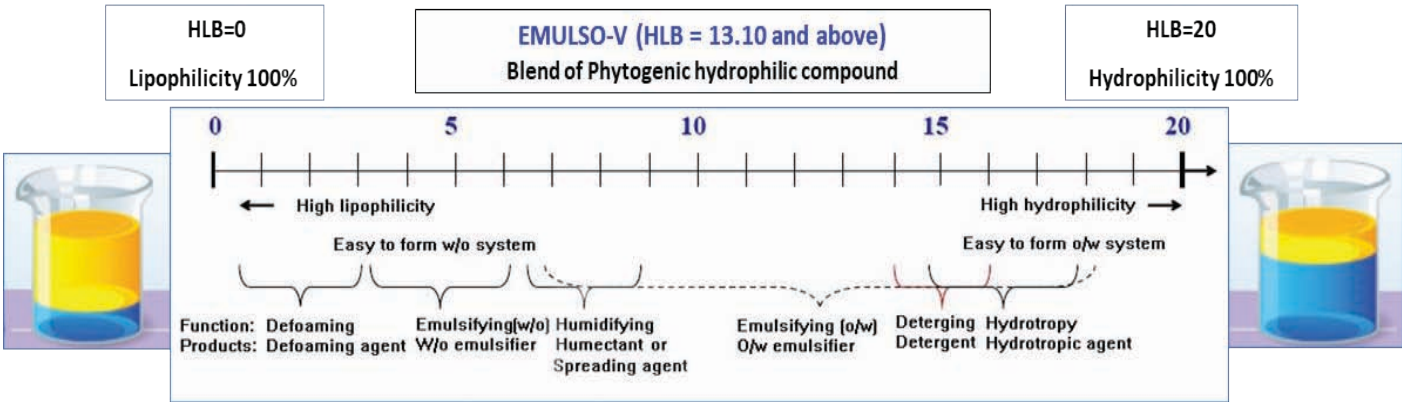
HLB – 4 to 6 are using as water in oil emulsifiers, HLB – 7 to 9 are using as wetting agents, HLB - 8 to 18 are using as oil in water emulsifiers, HLB – 13 to 15 are using as Detergents and

HLB – 10 to 18 are using as Solubilizers.

Bile salts are acting as natural emulsifier which is having HLB (Hydrophilic-Lipophilic Balance) value around 18. i. e. more hydrophilic, also there are various commercial emulsifiers available in the market.

Birds are consuming 2.5 to 3 times more water than the feed consumption, and total fat in feed is around 6 % or slightly more (depends on the feed ingredients), hence water consumption is approx. 30 – 40 times more than total fat intake, Hence birds require emulsifier which dissolve oil in water and should have more Hydrophilicity or HLB value (min. 8 and max. 18).

**Fig. 1. HLB Scale**




**Commercial emulsifiers –**

1. **Lecithin (Phospholipids)** – More lipophilic emulsifier with low HLB value hence not suitable for poultry. Its structure is having two lipophilic tails and one hydrophilic head.
2. **Lysolecithin (Lysophospholipid)** – Hydrophilic emulsifier with O/W emulsifier property but HLB is below 13. It is derived from lecithin and having one lipophilic tail and one hydrophilic head.
3. **GPEGR (Glyceryl Polyethylene Glycol Ricinoleate) /PEGR (Polyethylene Glycol Ricinoleate) / Emulso – V (Venky's)** – Hydrophilic emulsifier with **O/W emulsifier** property and HLB value is around **13.10 and above.** It is derived from castor oil and its structure is having more hydrophilic portion. Castor oil is rich in long chain unsaturated fatty acids which acts as a potent emulsifier itself. Toxicity of enzyme ricin is removed after heat treatment.

**About GPEGR/PEGR (Emulso – V) –**

Properties –

**Properties and Uses –**

I. PEGR is non toxic and naturally biodegrades and is recognized as Generally Recognized as Safe (GRAS).

II. PEGR is non-ionic and stable in broad range of pH and high temperatures and is suitable for pelleted feeds.

III. "Nutritional Emulsifier" as it consumes little energy than other emulsifiers like soy lecithin and dissolved in gut by mechanical stirring.

IV. It can increase digestibility of long chain saturated fatty acids (C16 and C18) hence; it is economical as animal fats and some vegetable fats (Like Palm oil) contains LCFA (Max. saturated).

V. It reduces liver fat / abdominal fat pad and circulatory lipids as well as dietary lipids are utilized in better way.

VI. PEGR utilize more fat and can be used in least cost feed formulation for energy equivalence.

VII. PEGR act as a bio surfactant.

VIII. PEGR is compatible with NSPs because PEGR reduces viscosity (NSPs having property to increase the viscosity in GIT and increased viscosity leads to inadequate absorption of nutrients and impaired peristaltic progress of chyme through intestine which may leads bacterial overgrowth and micro flora reduces binding of bile salts to fat in upper intestinal tract, hence wash out the fats with reduces its utilization).

IX. PEGR is a good emulsifier and can produce effects inside as well as outside the body.

X. Inhibition of fungal growth – It bounds moisture (as moisture is inside the feed particle) it does not evaporate thereby maintains the nutrient value intact without any loss and inhibits the growth of yeast and mold. It also helpful for uniform mixing of not only fats or oils but also liquid amino acids, liquid vitamins and liquid acidifiers.

XI. PEGR acts as a lubricant during feed production which helps in better pellets production with less energy consumption. Also, due to the lubrication property, there is less friction in the dye which helps to increase the dye life.

XII. The process of pelletizing feed requires the use of steam at conditioning however steam and oil have no compatibility. The PEGR are known to improve the feed production process by reducing the interfacial tension between two immiscible phases of oil and water leading to quality feed production.

XIII. PEGR having excellent property to work synergistically with bile salts.

XIV. Aqueous solution of PEGR is stable in the presence of low concentrations of electrolytes such as acids or salts.

**Mechanism of Action –**

I. Upon entering into the Jejunal area or small intestine, Emulso-V starts breaking the large fat globules into smaller one and helps to expose their surface active area.

II. Pancreatic lipase identify exposed active surface of fat globules and starts its hydrolysis mechanism (i.e. Triglycerides from oils or fats divides in to one Monoglyceride and two Fatty Acids)

III. Emulso-V helps to form more "Micro micelles" with the help of Monoglycerides, Phospholipids and bile salts. "Micro micelles" can be absorbed easily through intestinal villi.

**Trial Reports:**

We have conducted several trials in broilers using Emulso-V as an emulsifier to study the efficacy of emulsifiers.

Note - In below mentioned trial, we have reduced 6 kg soya oil from per ton of feed and same is replaced with 6 kg maize per ton of feed resulting in reduction of 32.8 kcal ME per kg of feed in negative control as well as treatment groups.

**Table 3. Performance Report:**

| Performance Report | | | |
|---|---|---|---|
| Trial report of Emulso V on commercial broilers (Chicks placed on 15/10/19) | | | |
| Parameter | Positive control (Normal diet) | Negative control (Diet with reduction of 6 kg soya oil from normal diet) | Treatment Group (Diet with reduction of 6 kg soya oil from normal diet + 250 gms Emulso V per ton of feed) |
| Placed Chicks | 1500 | 1500 | 1500 |
| Avg. Body Weight (In Kg) | 2.481 | 2.467 | 2.498 |
| FCR | 1.73 | 1.78 | 1.71 |
| CFCR | 1.61 | 1.66 | 1.59 |
| Cum. Mortality | 56 | 60 | 67 |
| Cum. Mortality % | 3.73 | 4 | 4.47 |
| Mean Age | 42 | 42 | 42 |
| Reduced Oil Cost per kg feed in Rs. (Soya Oil cost @ Rs. 72/kg) | 0 | 0.432 | 0.432 |
| Addition of 6 Kg Maize instead of oil in negative control and test groups (Rs 21 / Kg feed) | 0 | 0.126 | 0.126 |
| Emulso-V Cost per kg feed (In Rs.) | 0 | 0 | 0.05 |
| Per kg Feed Cost (In Rs.) | 31.5 | 31.19 | 31.24 |
| Production Cost per Kg Meat (In Rs.) | 64.77 | 65.86 | 63.64 |

The trial shown that usage of Emulso-V improved broiler performance resulting in reduction of production cost/kg broiler weight as compared to control groups (Positive and Negative control), by better utilization of added fats/oils in the feed.

**Table 4. Fat digestibility trial:**

| Test Groups | Total Digestibility % of fat | Unutilized Fat % |
|---|---|---|
| PC | 75.81 | 24.19 |
| NC | 76.43 | 23.57 |
| NC + Emulso-V @ 250 gm | 77.23 | 22.77 |
| Increased than PC | 1.42 | -1.42 |
| Increased than NC | 0.80 | -0.80 |

**Conclusion** - Emulso – V helps to increase total digestibility of fat.

***PC – Positive Control (Normal Diet), *NC – Negative Control (diet with reduction of 6 kg soya oil from normal diet and addition of 6 kg maize per MT of feed).**

**Table 5. Fat yield trial:**

| | Positive Control | Negative Control | NC + Emulso-V @ 250 gm |
|---|---|---|---|
| Total Live Body Weight % | 100 | 100 | 100 |
| Dressed Weight % | 70.90 | 70.04 | 71.03 |
| Breast Meat Weight % | 22.26 | 21.91 | 22.59 |
| Fat Weight % | 1.36 | 1.35 | 1.23 |

**Conclusion** – Emulso –V helps to reduce abdominal fat pad, liver fat and helps to increase breast meat weight as well as dressed weight.

**Table 6. Serum cholesterol level:**

| Day 22 | Triglycerides (mg/dL) | Total Cholesterol (mg/dL) | LDL Cholesterol (mg/dL) | VLDL Cholesterol (mg/dL) | HDL Cholesterol (mg/dL) |
|---|---|---|---|---|---|
| PC | 51.69 | 109.14 | 20.21 | 10.34 | 78.59 |
| NC | 50.83 | 106.77 | 19.46 | 10.17 | 77.14 |
| NC + Emulso-V @ 250 gm | 50.49 | 109.17 | 18.87 | 10.10 | 80.20 |
| NC + Emulso-V @ 300 gm | 49.71 | 113.01 | 18.91 | 9.94 | 84.16 |

**Table 7. Serum cholesterol level:**

| Day 40 | Triglycerides (mg/dL) | Total Cholesterol (mg/dL) | LDL Cholesterol (mg/dL) | VLDL Cholesterol (mg/dL) | HDL Cholesterol (mg/dL) |
|---|---|---|---|---|---|
| PC | 72.63 | 102.07 | 31.65 | 14.53 | 55.89 |
| NC | 70.54 | 98.89 | 27.04 | 14.11 | 57.74 |
| NC + Emulso-V @ 250 gm | 72.12 | 102.28 | 26.26 | 14.42 | 61.59 |
| NC + Emulso-V @ 300 gm | 65.56 | 105.52 | 26.67 | 13.11 | 65.74 |

**Conclusion** – Emulso – V / PEGR is responsible for the increase a total serum cholesterol level but it increases HDL not LDL and Triglycerides and same is explained by Verlag Eugen Ulmer (2019).

**Recommended dosage levels:**

Dose of Emulso – V is 250 to 300 g per ton of feed (we can reduce 32.8 kcal energy per kg of feed by using Emulso – V).

**Summary (about Emulso-V):**

- **Emulso-V** (A unique nutritional synthetic emulsifier) is a blend of Phytogenic Hydrophilic Emulsifiers and major constituent is **Glyceryl Polyethylene Glycol Ricinoleate** which having strong activity to dissolve oil in water.
- It has good HLB value (Above 13.10) with strong surfactant activity than Phospholipid (Lecithin), Lysophospholipid (Lysolecithin) and other commercial emulsifiers and synergistically acts with Bile salts.
- **In Vivo Activity** - It has good activity to increase surface active area of fat/oil which triggers the activity of pancreatic lipase in fat digestion process and helps to form more micro-micelle for better absorption of fat and fat soluble vitamins. It reduces viscosity also, hence compatible with NSPs.
- **In Vitro Activity** – Binds moisture (i.e. moisture available at inside of grinded particles) for avoiding its evaporation, good lubricant property beneficial for pellet mill and reduces interfacial tension between steam and feed during conditioning process.
- It helps to reduce abdominal fat pad, liver fat and helps to increase fat digestibility and HDL cholesterol (good cholesterol).
- It helps to gain average body weight with reduction in FCR.
- Energy saving effects (we can reduce upto 32.80 Kcal ME per kg of feed with using Emulso-V as per recommended dosage) which can help reduces cost of feed formulation.
- Strongly compatible with all kinds of oils (either rich in saturated or unsaturated fatty acids, e.g. Tallow, RB oil, Palm oil, Blended oil and Soya oil etc), grains having NSPs and some amount of saturated fatty acids (e. g. Wheat, SBM, Broken Rice etc).
- **Dose** – 250 to 300 gms per MT of feed.

**References** –

References will be shared on demand.

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# Effect of dietary acidifier on performance of Broiler Chickens

Dr Onkar Pawaskar and Dr Mangesh Sagar

Feed additives containing low-molecular-weight organic acids are called as acidifiers. The importance of low-molecular-weight organic acids in livestock nutrition increased considerably in response to the ongoing ban on feed antibiotics. Different combinations of organic acids are used in feed of animals against bacterial infections. The dry form acidifiers contain organic acids, organic acid salts or their blends, usually based on carriers, which do not react chemically with the active ingredient. They are used in poultry nutrition for the purpose of maintaining the digestive pH at a level to prevent the growth of pathogenic bacteria. They also show bactericidal activity against pathogenic intestinal microflora. Most often, pathogenic bacteria begin to develop in the digestive tract when the lumen pH of the small intestine and caecum exceeds 5.8, and that of large intestine exceeds 6.2 The multiplication of pathogenic microorganisms in the intestine may result in the inflammation of intestinal mucosa or necrosis of intestinal epithelium. This causes increased secretion ofintestinal fluids which leads to diarrhoea. Diarrhoea and the associated dehydration cause birds to go off fed and may lead to their death in a very short period of time.

Cereals used for feed production may contain pathogenic bacteria and moulds, which may synthesize harmful mould toxins under poor storage conditions. Low-molecular-weight organic acids, particularly propionic acid have a strong inhibitory effect on the growth of moulds.

The amount of acidifier recommended for inclusion in poultry diets depends on several factors, mainly on alkalizing effects of feed ingredients and mineral supplement such as calcium sources. Under production conditions, the ban on feed antibiotics may result in considerable mortality rates, especially during the first 21 days of the birds. According to modern farming standards, chicken mortality rates must not exceed 3%. Excessive mortality may be due to the strong alkaline effect of high protein content of diets for young birds, when the digestive tract and its secretary capacity are not fully developed.

The aim of the study was to determine the effect of various organic acids on broiler performance.

**Materials and methods**

A total of 1024 day-old cobb broiler chicks were randomly divided into 4 groups, with 4 replicates of 64 birds. Birds in each replicate were kept in pens covered with saw dust. Shed temperature, humidity and ventilation were maintained in accordance with hygiene standards for young birds. The birds were vaccinated against F1 and IBD at day 5 and 12 respectively. All chickens received ad libitum starter type diets

(1–21 days) followed by grower type diets (22–42 days). The diets were composed of ground maize and soybean meal as the main ingredients (Table 1). Water was provided ad libitum throughout the trial. I P CID an acidifier from Volschendorf was added to trial diets at different dose rates and the control group was fed without any acidifier.

Feed consumption and mortality were recorded throughout the study and the feed conversion ratios were subsequently calculated.

**Table1. Components and nutritive value of the diets**

| Item | Diet | |
|---|---|---|
| | Starter (1–21 days) | Grower (22–42 days) |
| **Feed ingredients (%)** | | |
| Maize | 60.10 | 64.10 |
| Soybean meal | 32.50 | 28.50 |
| Oil | 4.00 | 4.00 |
| Dicalcium phosphate | 1.70 | 1.70 |
| Limestone | 0.60 | 0.60 |
| NaCl | 0.35 | 0.35 |
| L-lysine HCl (78%) | 0.11 | 0.11 |
| DL-methionine (99%) | 0.14 | 0.14 |
| Mineral Mixer | 0.10 | 0.10 |
| Vitamin premix | 0.05 | 0.05 |
| **Percent Nutrients in diet** | | |
| Lysine | 1.2 | 1.0 |
| Methionine | 0.52 | 0.57 |
| Crude fat | 2.7 | 2.4 |
| Crude fibre | 3.5 | 4 |
| Calcium | 0.97 | 0.92 |
| Phosphorus | 0.52 | 0.51 |

## Results

Adding the acidifier to chicken feeds reduced the pH of starter diet from 6.90 to 5.89, and that of the grower diet from 6.28 to 5.73. Supplementing diets with the increasing amounts of acidifier (from 1.5 to 3 kg/ton of feed) significantly increased body weight of chickens at 21 and 42 days of age compared to the control birds (Table 2). Mortality decreased significantly, with significant differences in relation to the control group. Feed consumption has slightly increased at 2kg and 3kg IP CID added groups but feed conversion remained approximately same. Feeding the acidifier significantly increased carcass weight at 43 days of the experiment (Table 3). Significant differences were found in dressing percentage, which was the highest with the acidifier supplemented at 2 kg/ton and the lowest at 3 kg/ton, but was still higher compared to the control value.

**Table2. Growth performance of broiler chickens**

| Item | Control | I P Cid at different dosage (g/kg diet) | | |
|---|---|---|---|---|
| | | 1.5 | 2 | 3 |
| **Body weight at 21 days (g)** | 702 | 764 | 758 | 759 |
| **Body weight at 42 days (g)** | 2687 | 2732 | 2776 | 2772 |
| **Mortality (%)** | 2.6 | 0.4 | 0.58 | 1.2 |
| **Feed Intake (g/ bird) at 42 day** | 4621 | 4617 | 4885 | 4795 |
| **F.C.R.** | 1.72 | 1.69 | 1.76 | 1.73 |

The results of this study show that the dietary level of 0.15, 0.2 or 0.3% acidifier, increases the growth rate of chickens during both the first 21 days of age and over the entire 42-day period. Better body weight gain was accompanied by increased feed consumption, although no significant differences were found in feed conversion ratio.

These data may be indicative of the superior conversion of the amino acids and energy from the acidifier supplemented diets and of the superior conversion of energy into broiler tissues.

**Table3. Carcass weight and dressing percentage**

| Item | Control | I P Cid at different dosage (g/kg diet) | | |
|---|---|---|---|---|
| | | 1.5 | 2 | 3 |
| **Slaughter weight (g)** | 2795 | 2846 | 2881 | 2894 |
| **Carcass weight (g)** | 1977 | 2056 | 2099 | 2082 |
| **Dressing percentage** | 70.73 | 72.25 | 72.86 | 71.95 |

The gradual increase in acidifier amounts in the experimental diets prevented mortality in chickens. The mortality had drastically reduced. This suggests that the acidifier protected the chickens from intestinal infections and gastrointestinal disorders, which are a common cause of mortality. In the present experiment, in terms of stocking density and body weight per unit floor area, the housing conditions were similar to the conditions used in large scale production.

The I P CID acidifier used in the current experiment contained acetic acid, propionic acid, formic acid, butyric acid, citric acid and lactic acid. The acidifying effect persisted into the final section of the digestive tract, which is the least acidic and most vulnerable to growth of pathogenic bacteria.

The results cited above indicate that the increase in chickens' body weight is in response to acidifying additives. It is of economic importance that the acidifiers significantly reduced chicken mortality in the study mentioned above.

In conclusion, due to the high protein contents, in addition to minerals, conventional broiler diets may have a highly alkalizing effect. Because the digestive tract of chickens is not ready to counteract the effects of alkaline digesta, the administration of acidifiers and additives that reduce digesta pH seem the most important factor regulating the status of intestinal microflora. Our study with I P CID acidifier showed that the most advantageous dietary level of this feed additive ranges from 1.5 to 3 kg/ton, with 2 kg/ton regarded as the optimum dose.

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# NutraseXyla HS, the universal xylanase

**Hilke Willemsen, M. Sc, Ph. D and Kurt Van de Mierop, M. Sc**
**Nutrex nv**

Enzymes are widely used in the feed industry to enhance performance and reduce feed cost per unit of animal product. While most agree about the value of phytase use in vegetable based monogastric diets, there is much more debate about which Non-Starch Polysaccharide (NSP) enzymes can really make a difference, especially in corn-soy diets. As there appear to be as many opinions as there are enzymes, it is important to consider the basics that affect your choice.

**Arabinoxylans**

Arabinoxylans (AX), a non-starch polysaccharide (NSP) and poorly digestible plant cell wall component, is by far the most important anti-nutritional factor in raw materials such as wheat and corn. Due to its abundance, location in the plant material and to the lack endogenous NSP enzyme production in monogastrics, AX reduce feed digestibility and therefore animal performance considerably.

AX can be subdivided into a water-soluble fraction and water-insoluble fraction. Water-soluble AX are responsible for an increase in intestinal viscosity, making digestion and absorption of nutrients difficult. Also, unfavourable hind gut fermentation is stimulated. Water-insoluble AX are known to enclose digestible nutrients, making them unavailable to the animal. Although both types of AX contribute to the anti-nutritional effect, the most important AX fraction in all vegetable raw materials is the water-insoluble fraction; specifically in corn it is the only fraction that matters in practice. The anti-nutritional effect of water-insoluble AX is often overlooked and underestimated, as it does not result in "visible"digestive problems (higher digesta viscosity, wet litter)as is the case for water-soluble AX. The over all anti-nutritional effect of AX is related to their combined level in the feed as well as to the ratio of water-soluble to water-insoluble AX.

Due to its enzyme-resistant properties, the water-insoluble AX fraction is much more difficult to degrade than the water-soluble fraction. For this reason, most xylanases have failed to bring improvements to corn-soy diets since the only way to achieve this, is by degrading the water-insoluble AX fraction. This has led to much disappointment among nutritionists with regard to xylanase efficacy in corn-soy diets.

Table 1: NSP content of feed ingredients (as % of dry matter)

| | Water-soluble AX | Water-insoluble AX | NSP | AX/NSP |
|---|---|---|---|---|
| Corn | 0.1 | 5.1 | 8.1 | 64% |
| Corn DDGS | 0.4 | 12.6 | 28.6 | 45% |
| Rice Bran | 0.2 | 8.3 | 21.8 | 39% |
| Wheat | 1.8 | 6.3 | 11.4 | 71% |
| Wheat DDGS | 4.9 | 13.4 | 33.2 | 55% |

**NutraseXyla HS**

NutraseXyla HS is a unique endo-xylanase able to break down both water-soluble and water-insoluble AX. Even more, NutraseXyla HS has been found to be far superior to other xylanases with regards to the breakdown of the water-insoluble AX fraction. As thesoluble AX chain is broken into smaller AX fragments less water is bound, and the viscosity of the digesta is vastly reduced. In addition, the breakdown of water-insoluble AX also results in the release of additional energy and nutrients, by making nutrients such as protein and starch available for digestion by the animal's endogenous enzymes. Furthermore, the smaller AX-fragments, also known as AXOS, have been found to be a source of prebiotics which are fermented in the ceca to produce high levels of butyrate. Butyrate has multiple beneficial effects as it supports the intestinal integrity and the development of beneficial microbiota, improves gut morphology and modulates the immune system. Thanks to its optimal activity at neutral pH, NutraseXylaHS has a longer time to work at its maximum capacity in the gastro-intestinal tract compared to other xylanases.

Futher more, NutraseXyla HS is highly stable and can withstand intensive and high temperature pelleting conditions.

**Conclusion**

Thanks to its combined properties, NutraseXyla HS is an NSP enzyme that substantially reduces feed costs by improving feed digestibility and increasing nutrient and energy availability. NutraseXyla HS has a proven record of efficiently breaking down water-insoluble AX, making it especially successful in corn based diets. Futher more, NutraseXyla HS also impacts intestinal health through the prebiotic action of butyrate. The combination of NutraseXyla HS' unique characteristics strongly boosts monogastric performance and reduces production costs, regardless if they are fed a corn, wheat or other cereal based diet.


***Courtesy:*** *NECC*

# Moving Towards 'Atmanirbhar Bharat' in Poultry Meat Production & Consumption Post COVID-19

**Dr Shirish Nigam**
Managing Director, EW Nutrition South Asia

Chicken meat can arguably be considered as "King of all meats' owing to its availability, taste and nutritive values. In India, the chicken meat consumption is steadily rising YoY and the annual consumption in FY 2019 was considered to be around 3.8MMT with a CAGR of around 6%.

*Ministers from the Telangana government eating chicken at a public event to refute rumours that consumption of poultry products can cause Covid-19. (Image courtesy: WWW.NEWSMETER.IN)*

For FY 20-21, this consumption is anticipated to decrease owing to numerous factors including reduction in placements, negative social publicity, prevalence of misconception of getting Covid-19 infected through eating chicken, increase in retail cost of chicken meat and reduction in disposable income of people amid continuous lockdowns and slowdown of economy as a whole.

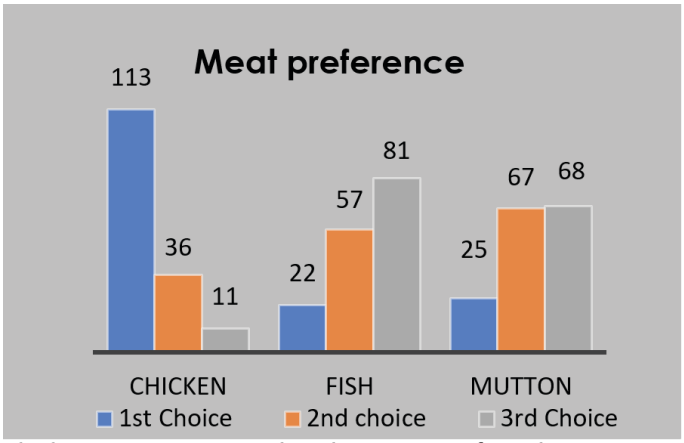
Nevertheless, this trend is absolutely temporary as the situation is going to turnaround soon after the Covid situation gradually improves. There is a tremendous scope of amplifying the profits amid changing environment in current scenario. It is paramount that poultry producers work on a paradigm shift in their business and operational models so that they adopt to new "normal" and meet the changing expectations and needs of the customers.

To understand the changing patterns and rising expectations of the chicken meat consumers, a market survey was launched in May,2020.The survey lasted for nearly 5 weeks and covered nearly 200 non-vegetarian customers. Their responses were recorded and analysed to get the insights and changing trends of chicken meat consumption. The demography of respondents was represented by 74% male population and more than 50% of the respondents belonged to service class. 60% of the respondents belonged to North and Southern parts of India and 40% from North and Eastern region.

The outcomes of the survey are highlighted in context of the changing business scenario. More and more people are operating from home and moving out only in case of emergencies. This has led to the increase in the consumption of food among households but at the same time the demand in the restaurants and hotels has plummeted. Moreover, the due to the closure of educational institutions has also resulted in the decline in the demand of poultry meat. Thus, in order to compensate the loss in later segment, it is eminent to reach directly to customers by increasing the retail sales. Immunity has become a buzzword now and even a layman knows the importance of boosting immunity through good quality proteins. Also, there is an increased focus of government which may result in launch of new supportive policies and schemes for this sector in the time to come. It was highlighted by our honourable PM in his Independence Day message that poultry and animal husbandry can play an important role in doubling the farmer's income.

**Preference of Meat:**

**CHICKEN MEAT EMERGED AS MOST PREFERRED MEAT BY 70% OF THE RESPONDENTS**

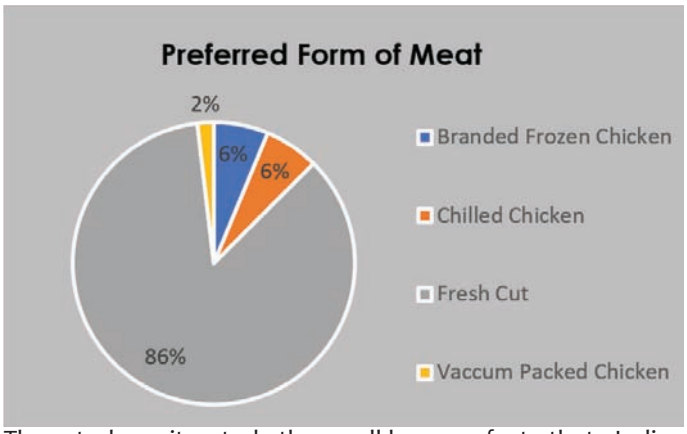



Chicken meat was considered as most preferred meat owing to its nutritive features and safety. The consumption pattern was analysed and found to be weekly once by over 50% of the population covered.

Chicken meat is considered as one of the healthy meats and is relatively low in fats and cholesterol among other meats. It has good amount of proteins of high biological value and is laden with n-3 polyunsaturated fatty acids. It provides selenium as antioxidant and aids in immunity building of body to fight against pathogenic bacteria and virus.

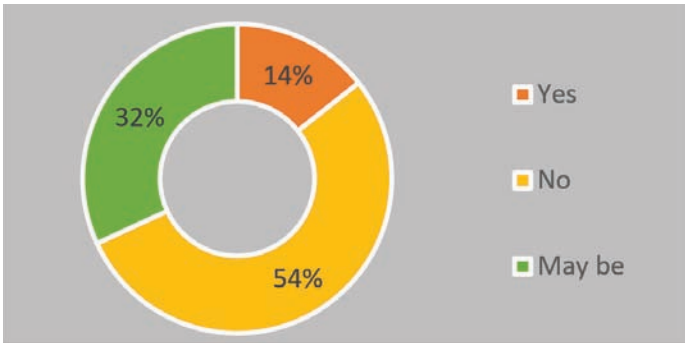
The poultry meat production is expected to rise with a CAGR of around 9% from FY 2015-16 to FY 2022-23. The meat availability per capita is also bound to rise by CAGR of 7% thus creating lot of scope and opportunities in this segment

FRESH CUT CHICKEN MEAT IS MOST PREFERRED FOR INDIAN CONSUMERS




The study reiterated the well-known fact that Indian consumers prefer the fresh cut chicken than other forms. This is the traditionally preferred form of chicken which may shift towards the packed and branded chicken. Post covid outbreak, safety of chicken meat becomes paramount and largely people will shift towards a meat with full traceability and untouched by hands. This is reflected in the study where nearly 46% of the respondents will/may look for anew outlet with assured quality, safety and traceability of chicken meat.

46% OF THE CONSUMERS WILL/MAY LOOK FOR A RELIABLE AND TRUSTED OUTLET FOR SAFE CHICKEN MEAT




**Key Challenges Amid Changing Environment**

The pandemic has brought many challenges in poultry industry in terms of fluctuations of market demand, supply chain issues, labour sourcing, inconsistency in cash flow among the key highlights. This has given the opportunity to poultry producers to re-invent their approach of doing business in "new normal". There is a dire need to reaching direct to consumers to minimize the risk of business and reduce the dependency on traders and middlemen. The key drivers in the changing business and market scenario can be projected as follows:

a) Creating alternate ways of supply chain to reach consumers
b) Technological advancements and innovations
c) Resources optimization and enhancing business process efficiency
d) Effective forecasting and agility in remodelling the business operations
e) Sustainable ways of poultry production with minimized antibiotics

**Communicating the Message Effectively**

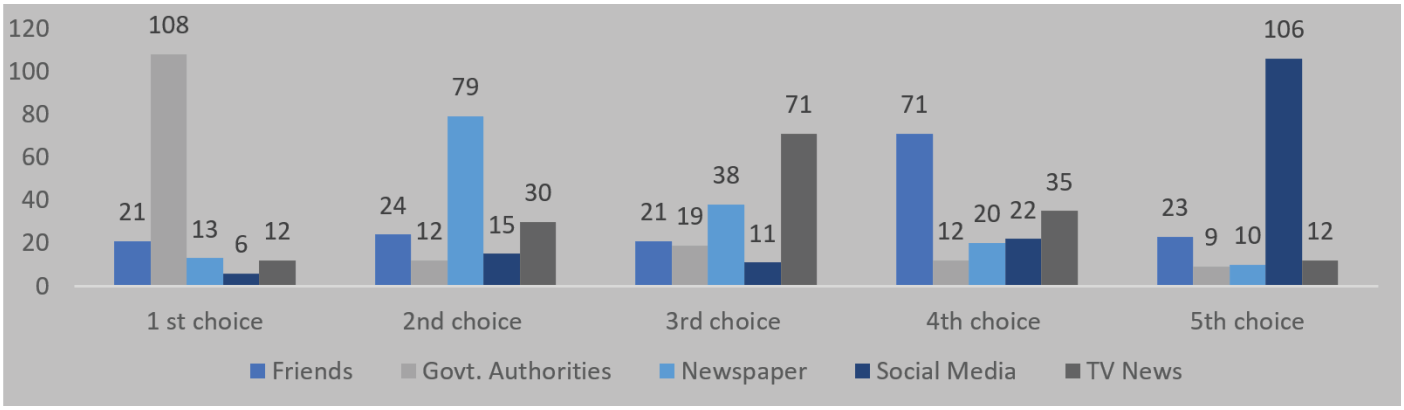
As the Covid-19 pandemic start emerging, spread of rumours citing the spread of virus through eating poultry meat wreaked havoc on the industry and lead to drastic fall in the chicken consumption.Largely, social media was blamed for the loss owing to its lightening speed of spread across all the sections of society.

In the study, it was observed that nearly 70% of the respondents considered government authorities as a credible source of information and social media was considered least reliable source of information.

NEARLY 70% RESPONDENTS TRUST GOVERNMENT AUTHORITIES AS AUTHENTIC SOURCE OF INFORMATION BUT REACH AND SPEED OF FALSE MESSAGES THROUGH SOCIAL MEDIA CAUSED DAMAGE TO POULTRY INDUSTRY

**Recovering from Losses:**

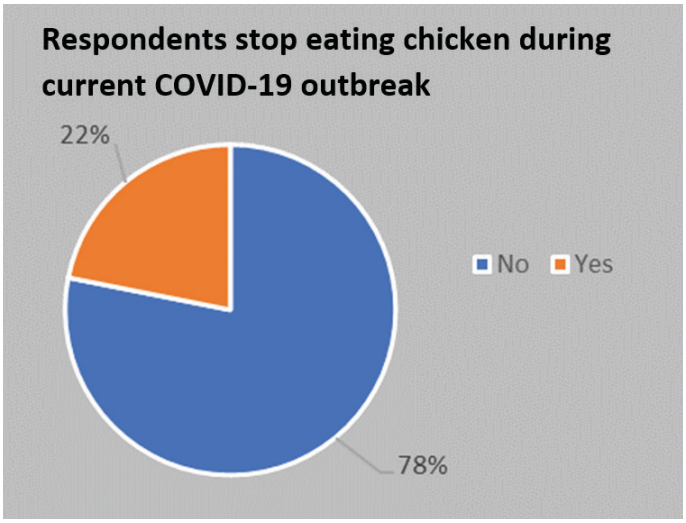
As per the estimates, poultry industry suffered a loss to the tune of Rs. 1.6 Billion per day. This was largely created by Fake News and irresponsible and baseless news of linkage of spread of corona virus by eating chicken meat. Various efforts were made by FSSAI, political leaders, integrators and other stakeholders of industry to curtail the loss but did not proved enough. Lot of chicken melas and awareness camps were organized to spread right information among general public.



It generated lot of interest and attracted crowd who attended and participated in the mela consuming chicken and busting the myth.

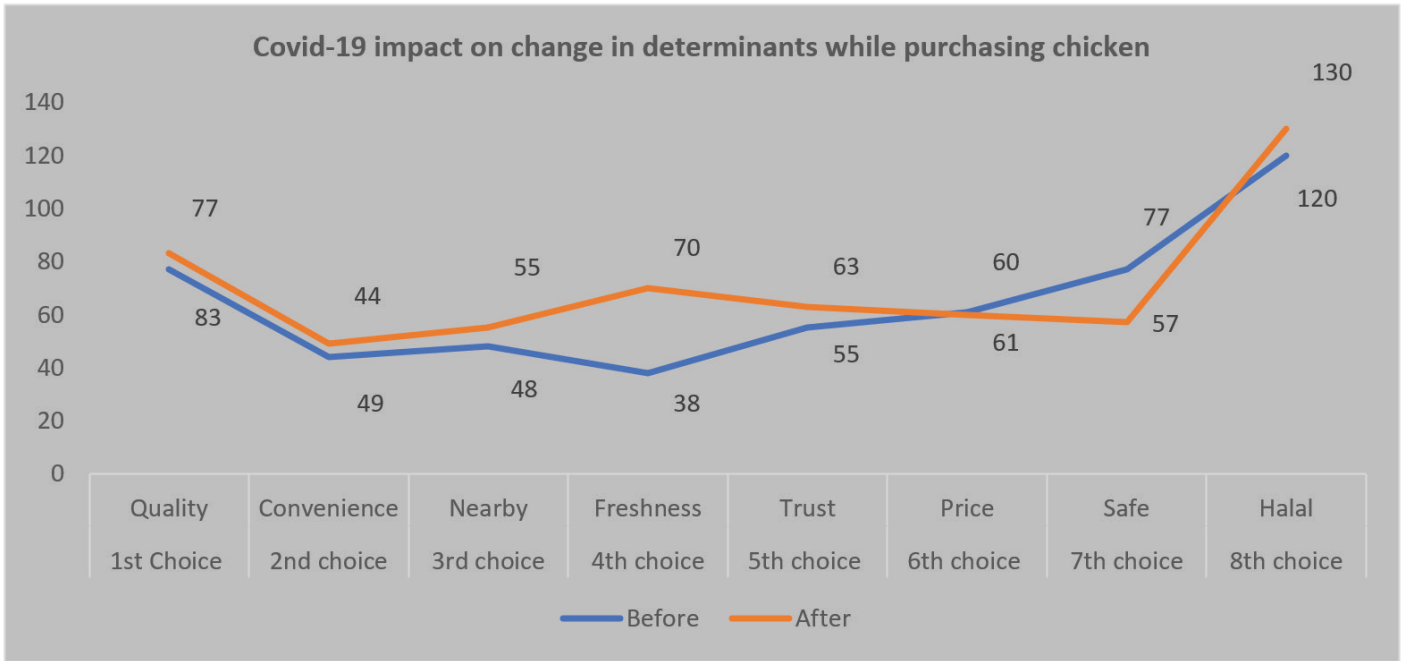
In the study conducted, it was found that around 22% of the respondent stopped eating chicken amid corona pandemic. It may be due to the lack of right information or due to precautionary approach as meat is considered as luxury food item and not a necessity.

22% OF THE RESPONDENTS STOPPED EATING CHICKEN DURING COVID-19 OUTBREAK




**Need of the Hour- Good Quality Chicken Meat with Complete Traceability**

In the current study, it was estimated that people are focused on quality post covid and will prefer a branded chicken which represents quality and trust.

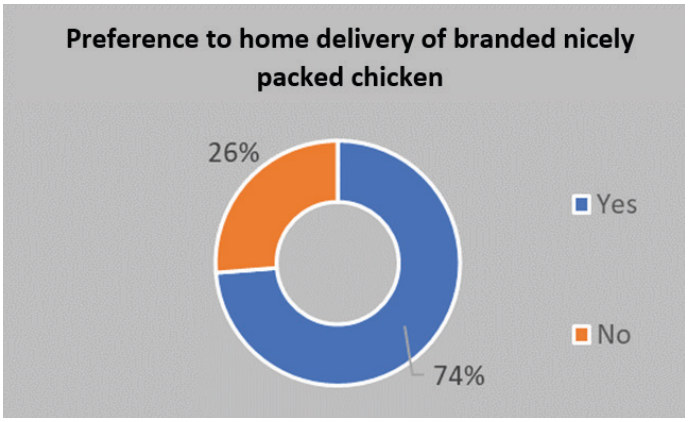



QUALITY, FRESHNESS AND CUSTOMER CLOSENESS ARE IMPORTANT PARAMETERS CUSTOMERS EVALUATING POST COVID

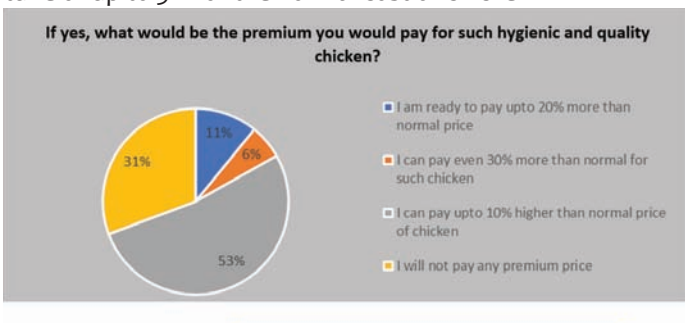
**Paradigm Shift for Quality:**

Most of the respondents were in agreement to receive a nicely packed branded chicken with guarantee of quality and traceability directly delivered to their home

NEARLY 70% OF RESPONDENTS WERE READY TO PAY PREMIUM PRICE FOR A GOOD QUALITY BRANDED CHICKEN



It is paramount that the business process to be again looked from new angle and perspective and then backed with required technological and operational innovations, poultry producers should carve a new way which leads to the profitable future. Today's consumer is technologically well connected and understands the importance of value additions in food delivery systems. They are willing to pay premium towards a good quality and hygienic chicken meat. The same was reflected during the survey where a whooping 70% of the respondents were ready to pay premium to the tune of up to 30% of the normal cost of chicken.




74% RESPONDENTS VOUCHED FOR HOME DELIVERY OF NICELY PACKED BRANDED CHICKEN WITH GUARANTEE OF QUALITY & TRACEABILITY

**Conclusion:**

The growing pandemic has created a need for the safe and hygienic food. The chicken meat in India is largely based on wet markets and individual meat sellers. There exists a huge opportunity for safe, hygienic and branded product as the segment is growing by double digits which has got a huge thrust from the pandemic outbreak.

The current study delved into the mind of new age consumers with a changing mindset. Due to the change of consumer mindset following the Covid-19, this study revealed that the future surely lies in branding, processing and adding value to the produce. Today's consumer is well connected and aware about the latest advancements and willing to try new products and services which satisfies the quality parameters. The need of a good quality protein is clearly established to improve the immunity and stay healthy. Thus, it becomes vital that poultry producers innovate and bring technological advancements and innovations in supply chain and production processes to connect with the consumers directly. For this, the integrators can directly get benefit from the organizations working on "Partners in Progress" model and has the expertise in planning and executing specified programs including antibiotic reduction.

*(Disclaimer: The views expressed by author are personal and does not endorse the view of company. Currently the author is working as Managing Director of EW Nutrition South Asia)*

***ashish.sachdeva@ew-nutrition.com***

# Bacteriophages and their applications in poultry industry

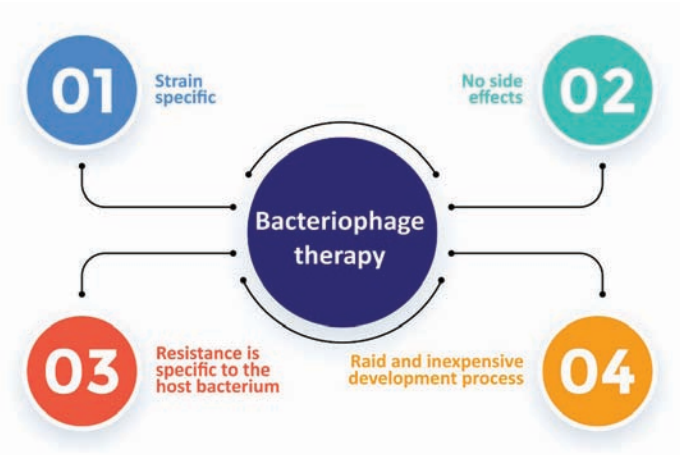
**Highlight Points**

The poultry industry is one of the largest consumers of antibiotics globally. Owing to the risk of increasing antimicrobial resistance, The European Union banned the use of antibiotics in food producing animals. However, they continue to be in use in other parts of the world. The emergence of multidrug resistant bacteria has been a cause for concern in poultry producers across the world. In the light of this crisis, scientists across the world are working to utilize microbial warriors as alternatives for antibiotics.

**Aditya Vashistha**
Regional Sales Head - North

The poultry industry is one of the largest consumers of antibiotics globally. Owing to the risk of increasing antimicrobial resistance, The European Union banned the use of antibiotics in food producing animals. However, they continue to be in use in other parts of the world. The emergence of multidrug resistant bacteria has been a cause for concern in poultry producers across the world. In the light of this crisis, scientists across the world are working to utilize microbial warriors as alternatives for antibiotics.

Bacteriophages are viruses that latch on to bacteria, replicate and destroy them from within. They kill bacteria and other microbial pathogens, but have no adverse effect on humans. They are remarkable because they have co-evolved with bacteria, and every single bacterium has a phage opponent that can be turned against it. Phages outnumber bacteria by a ratio of 10 to 1, and also play an important role in




recycling the carbon in bacteria. They have both preharvest and postharvest applications in poultry production, and bacteriophage preparations are becoming increasingly commonplace in the global market.

**Treatment of Bacterial Infections**

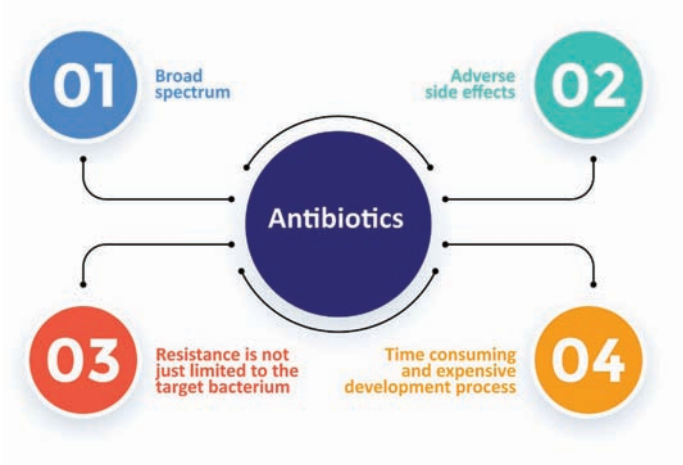
Excessive use of antibiotics to treat pathogenic bacteria not only increases antimicrobial resistance, but also can also affect intestinal microbiota, and cause dysbiosis, immunosuppression, and secondary infections.

| Antibiotics | Bacteriophage therapy |
|---|---|
| Broad spectrum | Strain specific |
| Adverse side effects | No side effects |
| Resistance is not just limited to the target bacterium | Resistance is specific to the host bacterium |
| Time consuming and expensive development process | Raid and inexpensive development process |

- **Campylobacter** – This bacterium is commonly found in the gut of birds, on account of their conducive body temperature. Although chickens are carriers, they don't exhibit any clinical signs. Studies have shown a high prevalence of campylobacter in both layers and broilers. Campylobacter phages can reduce their abundance without affecting the gut microbiota. As of now, there have been no reports of phage resistant Campylobacter.
- **Salmonella** –The second most important zoonotic foodborne pathogen, salmonella infections can be grouped. The highest levels of salmonella positive samples are found in laying hens, breeding hens and broilers. Several outbreaks have been reported from India over the years, and researchers have successfully isolated antibiotic resistant profiles. Bafasal, a regulatory approved feed additive developed by Proteon pharmaceuticals, has a strong impact on food safety, with a high specificity towards Salmonella serovars, apart from improving feed conversion rate and reducing mortality.
- **Escherichia coli** – This gram-negative bacillus is a common inhabitant of the digestive tract of birds. Although most of the strains are non-pathogenic, certain pathogenic serotypes have been found to induce disease and cause mortality. It can act as both primary and secondary pathogen and E. Coli related infections are common among poultry of all ages and categories. Bacteriophages when used in combination with antibiotics, improved the effectiveness of colibacillosis treatments.
- **Clostridium** – This gram positive bacterium is ubiquitous and a common inhabitant of the gut microbiota of chickens. Both types of the bacterium produce toxins that can cause necrotic enteritis, which is the most financially devastating diseases in poultry flocks. It can also cause foodborne diseases, making it a potential public health concern. The synergistic effect of lytic phages in combination with bacteriocin have been shown to significantly reduce the bacterial population.

**Phages as disinfectants**

From legal regulations to biosecurity strategies, a number of approaches have been suggested to reduce the bacterial contamination in poultry facilities. Since the main source of meat contamination is the flock, we need to reduce their prevalence in chicken farms. Bacteriophage based disinfectants can be used as biosanitizers in farms, hatcheries, and transport crates. They are effective in inhibiting bacterial biofilm formation. Aerosol based sprays can also help prevent horizontal transmission of pathogens. In food processing plants, they can also be used to disinfect food contact surfaces, the skin of poultry carcasses, and in direct on-food application and food packaging.




**Are they the future?**

Antibiotic resistance is a problem that is not addressed enough. Once you have two microorganisms in a particular group that is resistant to an antibiotic, they reproduce in a short time span, and soon you have a generation of bacteria that are resistant to antibiotics. This makes bacteriophages the perfect ammunition to aim in the direction of bacteria. For diseases that are caused by only one type of bacteria, page therapy is the perfect option. If the disease is caused by more than one type, then we need a cocktail of phages that are specific to each of the infecting bacteria. While more progress remains to be made on this front, this is going to be the area of focus as we move towards a post-antibiotic era in poultry farming.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3644580/

# Srinivasa & Hy-Line holds First-ever India Technical School live Webinar

Srinivasa Hy-Line had hosted the first-ever India Technical School live Webinar on 30th July 2020. The webinar received a tremendous response with the participation of Poultry Farmers, Veterinarians, Poultry Consultants, and Nutritionists from Pan India.

The Technical School was focused on increasing profitability from the layer bird with topics covering the entire gamut of farm management, bio-security, nutrition and disease management.

The webinar had international speakers who are the domain experts of Hy-Line International, Dr. lan Rubinoff, Dr. Petek Settar, Dr. Seiche Genger, Dr. Doug Grieve and Mr. Vitor Arantes.

The farmers had highly benefited with crucial information from the experts during the Q&A session. The session marked active and engaging participation from farmers and veterinarians.

Awards were instituted to acknowledge the exceptional contributions made by layer farmers across categories at all India and regional levels. Two top performing farmers at all India level were each awarded with a Certificate for Excellence and 10,000 Hy-Line W-80 Chicks. The regional level top performers were awarded with Certificates.

Mr. Immani Srinivas
**Sri Venkata Durga Poultry Farm, Peddapuram, Andhra Pradesh**

Awarded the All Indian level - Most Profitable Batch with a Cumulative Feed of **115gms per Egg upto 77 Weeks**

Mr. Elan Cheran
**Cheran Poultry Farm, Harur, TN**

Awarded the All Indian level - Highest Single Cycle(without molting) Hen Housed Eggs of **405 Nos upto 90 Weeks**

## Key Speakers

**Dr. Petek Settar**
Senior Geneticist, Hy-Line International

**Dr. Douglas Grieve**
Senior Global Technical Services Veterinarian, Hy-Line International

**Dr. Ian Rubinoff**
Director of Global Technical Services, Hy-Line International

**Dr. Seiche Genger**
Technical Services Veterinarian Southeast Asia, Hy-Line International

**Mr. Vitor Arantes**
Global Nutritionist, Hy-Line International

# Laboratory data, its management and analysis

**Avinash Bhat and Sabiha Kadari**
Trouw Nutrition India Private Limited

Information and data are collected in all sort of forms and all the time. Twenty first century is all about gathering the information and data. The data collected may become irrelevant, if it is not adequately processed. Unprocessed data is an expenditure of time, money and manpower invested in collecting those, without yielding any conclusions that could have been possibly drawn. Data collected, analyzed and interpreted in a proper way will give an insight of the challenge and the associated solutions that can be offered.

Laboratories are major sources of systematic information and data. Laboratory data are of two types. First one is an internal one which mainly deals with internal quality control and management. Second one is the lab output data, like analysis results or reports.

**Internal data**

A vast amount of internal information and data are generated due to implementation of robust quality management system (QMS) that enables the laboratory to assure its quality. The QMS covers each aspect of the laboratory that could influence either directly or indirectly the integrity of the analytical results.

**Standard operating procedures (SOP)** need to be documented and catalogued for each and every processes starting from sample receipt; sample handling;analytical procedures; procedures for equipment, chemical and lab-ware handling and management; traceability procedures; laboratory safety management.

**Personnel management:** Knowledge and skills of laboratory technical staff affect the quality of the results produced. To guarantee this aspect, the laboratory should be confident that the personnel involved are capable of conducting the methods correctly.

**Validation analysis results:** The validation analysis will prove the principle of the method is correct. Validation is achieved by determining the following parameters delineating the quality of the method:

- Limit of detection (LOD) and Limit of quantification (LOQ) are the lowest concentration that can be identified and measured, respectively.
- Accuracy describes the difference between the result found by the laboratory and the true value in a sample.
- Precision describes the variation in the results found by the laboratory in the same sample. Precision can be estimated at the same time and under the same conditions, which is repeatability, and at different times and conditions, which is intra-laboratory reproducibility.
- Linearity describes the upper limit for which the concentration shows a linear relationship with the measured signal. This parameter is only relevant with a calibration curve.
- Selectivity describes the influence of other components on the measured signal.
- Sensitivity describes the quantitative relationship between the analyte and the measured signal.
- Robustness describes the effect of variation in the procedure on the measured signal.
- Stability describes the change of concentration of an analyte over time, stored at specific conditions, such as temperature and pressure. Calculation of these parameters requires analytical and statistical knowledge, and depends on the type of methodology utilized.

**Equipment:** The equipment affects the quality of the analytical results produced. It is of primeimportance to ensure that equipment is working according to the specifications. For this purpose, the laboratory should focus on regular maintenance and performance checks. The equipment logbook maintains all the records of maintenance, problems and results of performed test for the equipment involved, the extent of use of the equipment and names of the users.

**Control of the results:** The routine lab activitiesare influenced by random variations in the results introduced during execution of a procedure. Therefore, the laboratory should constantly check the quality of the results produced by the implementation of a first line of control procedure. The basic principle is to analyze a control standard within each batch of samples and use its result to judge the quality of the other results in the batch.

Shewhart-charts or control charts are most commonly used to record these results, including acceptance criteria and relevant statistical information. These charts are very powerful tools for a continuous check on the quality of the results, and also reflect changes in the performance of the method over time. The data obtained by the control charts, however, only recognizes problems at batch level and is therefore not guaranteed to avoid errors in individual samples. For this purpose, it is advisable to conduct analyses in duplicate in the same (repeatable conditions) or different batches (intra-laboratory reproducible conditions). Analyzing samples in different batches is statistically the best, but not always the most efficient approach. Quality of the results should also be monitored using set criteria for error percentages allowable between duplicates for each sample type.

Participation in collaborative trials (proficiency testing) and the analysis of Certified Reference Material (CRM) give valuable information about the accuracy of the results of the laboratory. The results found in collaborative trials are mostly evaluated by a z-score, which is calculated as the difference between the found value and the average divided by the

overall standard deviation, and should be between -2 and +2. The z-score should be used to identify the presence of systematic errors, and the determination of the uncertainty of measurement.

**Traceability:** Traceability of all activities in the laboratory is necessary to guarantee the quality of each individual result. To prove correct performance of the laboratory activity, all vital information must be recorded and stored. A traceability data should include following parameters -

- Condition of sample on arrival
- Information about the control samples analyzed
- All raw data produced
- Name of laboratory technician for each analysis conducted
- Identification of equipment used
- Signature for acceptance and date the report is sent to client
- Any communication from the client.

All critical factors should be traceable from the information on the worksheet. If necessary, the laboratory can prove that the technician was authorized to conduct this determination, the equipment had the correct calibration status, calculation of results was correct, samples were connected to the first line of control, and the results were authorized by qualified personnel. It is essential that all of this information is available and stored correctly for a specified period by the laboratory. The storage time for information depends on legal and customer requirements, but, in general, a storage period of 5 years is acceptable.

**Document Control:** The quality control system requires a great number of controlled official documents to describe all aspects of the process. These documents have to be updated regularly and the organization must ensure that only the most recent version is available and in use by personnel.

**Output data or report data**

The primary aim of any laboratory is to generate the results or reports. A huge quantity of data aregenerated in the process. The output data usually consists following parameters - sample description, source, date of collection, date of analysis and report, analysis method, result and comment on the result. These output data can be classified into two different categories

Results for customers – Usually this is the data generated by commercial laboratories. The data generated are usually not structured.

Results for R & D – Usually generated by R & D centers, academic institutes. The data generated are usually more structured.

**Laboratory data management**

Laboratory data management is a challenging operation. A successful modern laboratory data management needs robust management system, an electronic lab note book and data repository for internal data storage.

Current lab management platforms consists of Laboratory Information Management Systems (LIMSs) and Electronic Laboratory Notebooks (ELNs). A third tool called Internal Data Repository (IDR) is emerging to store the vast amount of data generated.

LIMS mainly focuses on managing the laboratory operations. It is originally designed to improve lab efficiency by managing workflows relating to samples and associated data. Nowadays, LIMS is being used in managing workflow, record keeping and inventory management and thereby help standardize the operations, tests and procedures, while providing controls to the process.

ELNs are the digital successors of paper-based laboratory notebooks, and are sufficiently secure and reliable to serve as reference in legal matters. Ideally, ELNs cover all events accompanying a sample analysis, and an overview of all run experiments. Most ELNs allow a manual upload of the representation of experimental data in some form (e.g. pdf files, spread sheet, text form), but fall short of handling experimental data and metadata storage adequately.

A dedicated data repository is essential to adequately keep vast laboratory data findable and accessible, with enough metadata to ensure its reusability. A flexible permissions system is required to regulate user access, together with search and filter functionalities for shifting through datasets. It is very essential to gather the raw data comprehensively with automated process directly from instruments. Calibration and other validation data should be filtered out during routine search operations, yet available when potentially needed.

A comprehensive LIMS platform can be created with the integration of ELN and data repository systemin order to allow a seamless management of whole laboratory system and integration of automatically gathered measuring data and manually entered protocols.

**Bigdata**

Individually the customer data may not be having any significance but collectively the data may reveal something unique. This is the way the concept of big data comes into picture.

Concept of big data has been around for years; most organizations now understand that if they capture all the data that flows into their businesses, they can apply data analytics and provide back valuable insights to the industry. Even as early as 1950s, businesses were using basic analytics by means of manual examination to uncover insights and trends.

New big data analytics brings about speed and efficiency in business.Whereas a few years ago business would have gathered information, and analyzed data conventionally to unearth the information to use for future decision. Today's big data analytics can identify the insights for immediate decision. The ability to work faster and stay agile, gives the organizations a competitive edge they did not have before. Big data analytics helps organizations harness their data and use it to identify new opportunities. That, in turn, leads to apt customized solutions, more efficient operations and happier customers.

The big data analysis of laboratory data has helped in varied fields like weather forecasting, crop management, management of diseases and epidemics in humans and animals, mycotoxin risk management and precision feeding in animal nutrition.

# The importance of exogenous enzymes in poultry production

**What are ENZYMES ?**

**ENZYMES are molecules of protein origin** that serve as catalysts in biochemical reactions on specific substrates. In poultry nutrition, the enzymes of interest are those that intervene in the process of digestion of large or complex molecules transforming them into simple components that can be absorbed and used as nutrients by the animal.

**Enzymes can be endogenous**, i.e. produced by the animal itself along the digestive tract. Poultry have deficiencies in the production of certain enzymes and about 15 to 25% of the feed they eat cannot be used. It is currently estimated that 70% of production costs are linked to feed, so failure in the use of nutrients represent significant losses for the producer. Current genetic strains in poultry farming require diets with high protein and energy concentrations to ensure production goals. It has been recommended that between 16 and 20% of crude protein, according to the production phase, should be added to obtain the maximum cost-production benefits in broiler breeds. Energy contributions are between 3000 and 3200 KcalEM/Kg. Enzyme production and function in each animal is of fundamental importance in the correct use of the ration's nutritional contributions.

A technological innovation applied today is the **addition of exogenous enzymes to feed rations,** that is, the incorporation to the animal of enzyme mixtures of external origin that allow a better use of nutrients. These enzymes are obtained from the culture of microorganisms such as fungi, yeasts and bacteria through fermentative processes. They can be incorporated into feed from additive formulations that guarantee their stability and correct functioning. Enzymes can be classified according to the substrate they react with. In the case of exogenous enzymes, there are four distinct groups:

***Carbohydrases:*** Enzymes related to the degradation of carbohydrates and associated with the use of energy from the ration, as well as the degradation of cell wall components of plant structures. These include enzymes such as xylanases, glucanases and amylases.

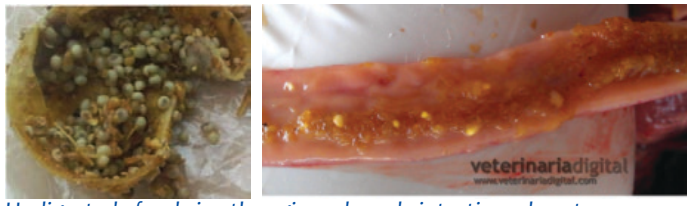
***Proteases:*** Enzymes related to the degradation of proteins and associated with the use of amino acids. Among them are enzymes such as pectinases.

***Lipases:*** Enzymes related to the degradation of lipids and their nutritional use.

***Phytase:*** Enzymes linked to the use of phytic acid

**WHAT ARE THE PROBLEMS THAT JUSTIFY THE USE OF ENZYMES IN POULTRY FARMING?**

*Insufficient production of endogenous enzymes:* Among monogastric animals, poultry and, especially young specimens, present insufficient endogenous enzymatic production that implies significant losses in the use of feed. The production of enzymes destined to degrading structures of the vegetable cell wall is null. The incorporation of exogenous enzymes destined to degrading the vegetable fiber allows the use of the energy potential of rations rich in grains, such as corn, soybean, wheat, barley and rye.

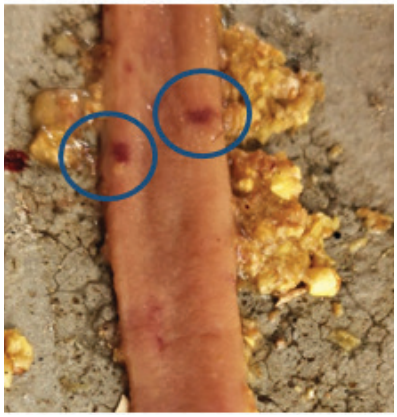



*Undigested food in the gizzard and intestine due to enzyme deficiency. Source: Digital Veterinary Medicine*

***Anti-nutritional factors:*** Grain-rich rations contain high levels of both soluble and insoluble fibres. These components generate a heterogeneous intestinal content. This favours an increase in viscosity and a greater predisposition to inflammatory processes, a reduction in the absorption surface, a slow down of the digestive transit and a greater energy investment in the digestion of nutrients associated with non-degradable structures. The incorporation of exogenous enzymes favours their catalysis and allows the animal's endogenous enzymes and microflora to take advantage of nutrients.

*Presence of gels with increased intestinal content viscosity. Enzyme deficiency increases the amount of anti-nutritional factors and undigested, insoluble substances. Source: Digital Veterinary Medicine*

***Pathogenic microorganisms:*** The processes mentioned above, accompanied by undigested feed in the intestine, promote biochemical and pH changes that favour the proliferation of pathogenic microorganisms, especially Gram-negative bacteria and coccidia. The incorporation of exogenous enzymes promotes a healthy intestine with a highly usable homogeneous content. As a result, the prevalence of digestive disorders tends to be reduced.



*Intestine with undigested food and lesions compatible with clostridiosis. Protease deficiency generates an increase in undigested proteins in the intestine predisposing it to the proliferation of Clostridium perfringens. Source: Digital Veterinary Medicine*

*Production and environmental sustainability:* Feed applied in intensive poultry systems usually results in feces with high moisture, nitrogen and phosphorus content. Beds with these characteristics are not well valued environmentally and economically. The incorporation of exogenous enzymes promotes lower water intake and higher efficiency in digestive processes. This generates better quality in chicken droppings, a reduction of humidity and nitrogenous substances in litter, while increasing animal comfort and welfare in the production system.

**What is MINERZIM?**

**MINERZIM is an additive formulated on the basis of an enzymatic mixture composed of carbohydrases and proteases**, intended for poultry of all ages and production stages. The enzymes that compose MINERZIM exert a synergistic action during feed digestion, guaranteeing the optimum performance of those formulations composed mainly of raw materials such as corn, soya, wheat, barley and rye. Its powder presentation allows the enzymes to be highly stable and incorporated into pellet production processes.

MINERZIM contributes to improving many aspects of poultry production:

Allows for more than 15% utilization of formulations rich in grains. It increases the use of the energy potential and protein contribution of rations rich in grains to be invested in muscle mass and egg production.

Increases the bioavailability of essential amino acids.

Reinforces the enzymatic system of young animals.

Eliminates anti-nutritional factors such as xylans and beta-glucans, reducing the frequency of diarrhea and digestive disorders.

Reduces the probability of diseases caused by pathogens that colonize the intestine.

Improves excrement and bedding quality, exerting a positive impact on the health and welfare conditions of the animals in the production system.

In studies carried out on broilers, MINERZIM has shown substantial improvements in the conversion rate compared to control groups without the incorporation of exogenous enzymes. Equal or higher final weights have been obtained in supplemented animals. This shows that the animals have required less feed consumption, since they have made a more efficient use of the ration. Morbidity and mortality rates have also improved in the supplemented group. The above-mentioned effects translate into economic benefits for the producer.

**CONCLUSION**

The feed formulations currently implemented in poultry farming have been a real challenge for the producer. Poultry alone cannot take advantage of the nutritional potential of the rations. The incorporation of exogenous enzymes as a supplement has proven to be an efficient alternative to optimize the nutritional performance of the formulations and prevent various conditions associated with poor feed digestion. MINERZIM is a varied complex of enzymes of different categories that exert a synergistic and enhanced action on grain-based rations, mainly corn, wheat and soya. The use of MINERZIM contributes to improving multiple aspects linked to production performance, intestinal health, animal welfare and economic benefits linked to nutrition.

# Technical Validation of Protease: Arrowvet Pr 400

**Dwipen Bhagawati**
Anthem Biosciences Pvt. Ltd, Bangalore, india

## Highlight Points

There are altogether ten essential amino acids that need to be provided through feed. Synthetic essential amino acids available for use are only 3 to 4, therefore optimum degradation of feed protein will release remaining 6 amino acids. More of them if released will improve the feed efficiency to that extent. The results of using Arrowvet400 clearly serves this purpose resulting into 6 points improvement in FCR as compared to same feed as control without this enzyme. The observation of 6W feeding trial at commercial farm in large number of birds is described in this report.

**Introduction:**

Use of external enzyme in feeds particularly for broilers is now been confirmed to improve the performance of birds by complementing the activity of enzymes secreted by them. This is mainly because the rate of passing of food from broiler intestine is fast and the native enzymes alone cannot complete the protein digestion. The feed enzymes, therefore play crucial role in enhancing the digestibility of feed improving the performance of birds. The amino acids, particularly the essential one are obtained through the consumption of feeds containing protein. Ingested proteins are broken down through digestion, which typically involves denaturation of the protein through exposure to acid and hydrolysis by enzymes called Proteases into amino acids. Metabolites of amino acids thus formed are used in synthesis of body protein, immunoglobulin, nucleotides and various hormones. Excess amino acids are used for gluconeogenesis and enter Kreb's cycle to generate energy that drives the metabolism towards body growth. Use of protein as a fuel is particularly important under starvation conditions since it allows body proteins - particularly those found in muscle - to be used to support life.

**Objective:**

To study the effectiveness of Arrow Vet PR 400 (Protease) in Poultry feeds.

**Scope of the Study:**

With regular increase in the cost of feed ingredients like Soya bean meal, Maize etc. use of enzymes like Proteases has significance for efficient utilization of non-conventional feed protein sources. Efficient usage of Arrow Vet PR 400 enables nutritionist to use economical non- conventional protein sources like canola meal, animal by-products etc.in feed formulations efficiently.

**Product Used : ArrowVet PR 400 ( Protease enzyme) 400 gms / MT of Feed**

**Place of trial** : Integration farm in South India (Bengaluru)

**Breed** : Cobb 400 Y

**Number of groups** : Two

**Number of chicks/group:** 3700

**Average DOC wt.** : 40 gram

**Duration of trial** : 42 days (First week to 6th week of age)

**Experimental Group :**

- **Control Group** : Standard feed
- **Test Group** : Standard feed along with inclusion of **ArrowVet PR 400**

**Standard Feed Used/Formulation:** Feed was formulated to meet the standard specification for Cobb breed using Soya bean meal (SBM), Maize gluten as protein source and Maize, broken rice, rice polish as energy source. Feed was efficiently mixed with vitamin mix, trace minerals coccidiostat, DCP and LSP as phosphorus and Calcium source.

**Methodology Followed:**

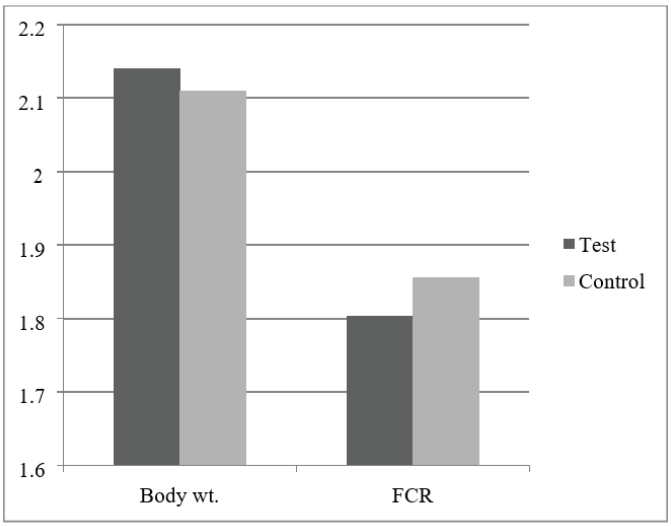
Two groups of birds are taken and marked as Test group and Control group. Test group was fed with the feed containing Arrow Vet PR 400 (Protease enzyme) at the suggested dosage whereas the control group was fed with normal standard feed i.e. without ArrowVet PR 400. The trial was conducted on deep litter for six weeks under standard conditions of management Growth performance i.e. weight gain, feed conversion ratio and mortality were recorded and compiled for the birds for control and for the test group.

**Traits Recorded** : 1. Body Weight 2. Feed Conversion Ratio 3. Survivability

**Result (Test Group):**

**Trial Observation (Summary):** Summary of results in terms of feed consumed and weight gained is given in table below.

| Groups | Chick in | Chick out | Mortality | Feed | Total wt. | A. Weight | A.FCR |
|---|---|---|---|---|---|---|---|
| Test | 3700 | 3500 | 5.30 % | 13530 Kg | 7675 Kg | 2.19 Kg | 1.76 |
| Control | 3700 | 3488 | 5.73 % | 13640 Kg | 7500 Kg | 2.15 Kg | 1.82 |




**Key Observation:**

- From the above data it is clear that the group fed with ArrowVet PR 400 resulted in better weight gain in comparison to control group.
- Feed efficiency (FCR) as expected in test group is significantly improved as compared to the control group.
- Fair development and condition of plumage.
- Mortality rate lower in test group.

**Conclusion:**

From the trial data, it can be concluded that **ArrowVet PR 400 (Protease enzyme)** is an ideal feed supplement for broiler feed. It enables customer to significantly reduce the cost of feed per Kg of bird. The effect is because of improvement in FCR an outcome of efficient conversion of protein in broiler intestine due to presence of the right protease enzyme, **ArrowVet PR 400.**

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# mg dosage can fetch millions

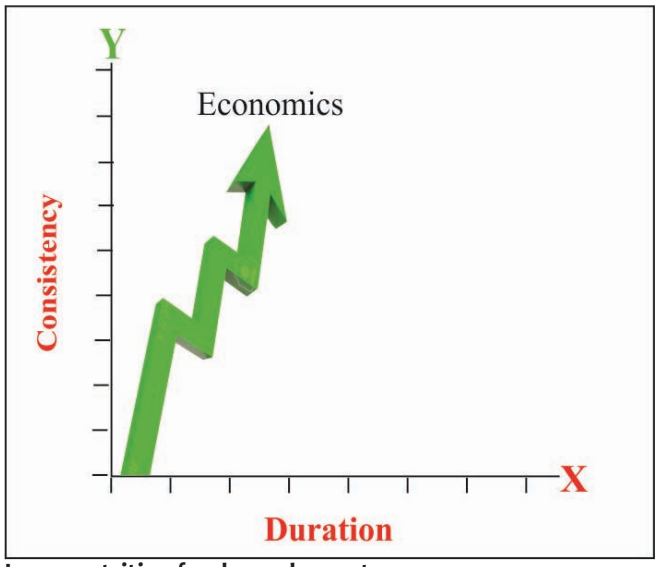
**Dr Ram Moorthy . D**
Country Head - India. Zagro Singapore Pte. Ltd.

Exploring the creative options with 'time framed task' that are within our control would be the assured keys for us to emerge as the winners with profitable poultry farming.

Such ignited thinking is 'must & urgent' during current pandemic situation and it's inter-related scenes, 'shuttling the market dynamics drastically.

**Consistency -A great 'Y' factor**

Poultry industry's today's challenge is not just feeding the quality feed ingredients but ensuring to feed the birds with the similar quality ingredients with consistency.




**Less - nutritive feed supplements -**

**Amazing BIOTECH tools**

Grossly, we concentrate into making top class feed formulation with high quality feed ingredients for ensuring good numbered nutritional values.

In addition, if we equally look for biotech options as less-nutritive feed supplements' with exploring attitude, many ways will be paved us for hassle free poultry farming.

**Tiny tools yield huge benefits**

Among the micro level 'less-nutritive feed supplements' like Trace Minerals, Amino Acids, Vitamins and Choline etc., It can be always given top priority to Vitamins, because of their important roles as 'supplements' start from the 1st hour of chicken till the end.

Feeding the birds' the high quality vitamins consistently is vital as they have many complexed roles to play in the metabolic pathways of protein, carbohydrate and fat etc. and can ensure the farmer next level of farming.

Such habits are like a vision to look forward beyond horizons.

**Yo-Yo birds**

Today's poultry birds are like 20-20 cricket match players in comparison to yesteryears' classic match cricket players for fitness vs performance.

Yesteryears' birds were challenged for performance; however today's birds are to achieve the time framed tasks with performance underlined.

Hence, undoubtedly today's birds need that extra nutrition by all means

**Yesteryears' luxury Vitamins are today's essential & mandatory tools**

Bench marking yesteryear's practice of adding/topping individual vitamins to the birds either as oral liquids or feed additives with today's supplementing composite vitamin premix through feed is incomparable and so the signs or symptoms of the deficiency of vitamins. These days it's very rare to find symptoms/signs of single vitamin deficiency in a poultry farm.

However it's very common to notice the deficiencies of one or more (complexed and/or combination) vitamins especially stunted performance with unknown aetiologies.

**A brief review of general concepts with current scenario of Vitamin deficiency**

| Vitamins | General concepts of deficiency | Topping/rich levels of Vitamins in the feed to ensure the potential factors |
|---|---|---|
| **A (Retinol)** | Early embryo mortality (poor hatchability) in breeders<br><br>Leg weakness in broiler<br><br>Egg yolk quality<br><br>Blindness | • Rich circulatory system avoids many respiratory complications<br>• Great antioxidant that enables the birds' to combat many diseases<br>• Avoids Dermatitis&<br>• Fatty liver<br>• Prevents oxidation of lipids especially linoleic acid – one of the determining factors for great egg size, hatchability in females and improved spermatogenesis in males<br>• Improves Metabolizable Energy (ME) by preventing oxidation of fatty acids |
| **D3 (Cholcalciferol)** | Leg weakness due to poor calcium absorption | • Strengthens shell quality of the breeding eggs which ensures even chicks growth<br>• Avoids many factors 'associated with shell defects<br>• Manure for great mineral metabolism |

| | | |
|---|---|---|
| **E (Tocopherol)** | Immunity | • Gears up mineral metabolism ensures quick rejuvenation of hepatic cells prevents chemical toxins' damage<br>• Prevents Fatty liver syndrome |
| **K** | Poor blood clotting | • Great reason for many metabolic functions |
| **B1 (Thiamine)** | Strengthens nervous system | • Improves Hatchability<br>• Improves shell quality<br>• Essential in the Glucose (Carbohydrate)metabolism in formation of fatty acids |
| **B2 (Riboflavin)** | Strengthens nervous system Prevents intestinal ulcer | • Ensures good Nervous system prevents Curled Toe Paralysis (CTP) especially in broiler<br>• Decreased egg production |

| Vitamins | General concepts of deficiency | Topping/rich levels of Vitamins in the feed to ensure the potential factors |
|---|---|---|
| **B3 (Niacin or Nicotinic Acid)** | Promotes various metabolic functions | • Important for visceral organs growth that prevents retarded growth and leg weakness |
| **B12 (Cyanocobalamin)** | Promotes Carbohydrate & fat metabolisms | • Promotes methyl group transfer thus promotes protein metabolism; hence important for rapid cell growth<br>• Ensures RBC synthesis and prevents Anaemia & integrity of neurons |
| **B6 (Pyridoxine)** | Neurons (Nervous System) Growth vitamins | • Promotes Protein metabolism<br>• Deficiency increases nitrogen excretion due to incomplete protein metabolism<br>• This leads to ammonia complications and respiratory complications |
| **B5 Calcium D Pantothenic acid (CDP)** | Hatchability<br><br>Promotes various major metabolic functions | • Ensures<br>• Nerve fibre regeneration<br>• Increased hatchability<br>• Feather growth<br>• Prevents Dermatitis |

| | | |
|---|---|---|
| **Biotin** | Prevents Dermatitis and improves Carbohydrate metabolism | • Prevents<br>• Fatty Liver Kidney Syndrome (FLKS)<br>• Foot pad Dermatitis<br>• Chronic feather loss leads to increased feed intake to meet the calorie requirements |
| **Folic Acid** | Helps RBC Production | Deficiency<br>• Leads to Leukopenia [reduced White Blood Cells – (WBC)]<br>• Rapid cell growth & tissue regeneration are affected. |
| **Ascorbic Acid Vitamin C** | Anti-oxidant Improves Immunity Prevents Scurvy | • Indirectly promotes protein metabolism<br>• Promotes early sexual maturity especially in male breeders |

**Few common Vitamin Deficiencies**

**Dullness & Depression (Vitamin A/E deficiency)**

**Nervous system Disorders (Vitamin E deficiency**

**Curly Toe Paralysis (Vitamin B2 deficiency)**

**Vitamins' inter-relationship**

Vitamins have strong interrelationship in their meta-bolism, which makes these wonderful composites' unique and their bonding compliments one another as a composition

This interrelationship of vitamins plays an important role during their metabolism which has been proven with many clinical studies.

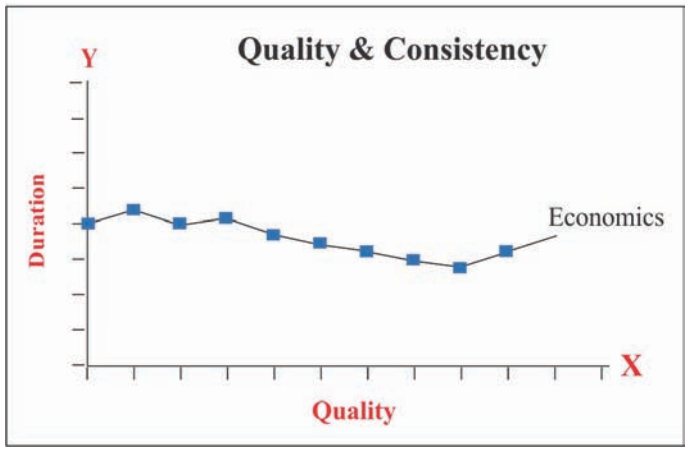
Hence, a balanced composition of vitamins is more appropriate and valuable than counting the individual vitamins alone.

- For an example Calcium D Pantothenic Acid (CDP) & Cyanocobalamin (B 12) have interrelationship in their metabolisms
- Close relationship exists between B12 and Folic Acid.

**Vitamin Antagonists**

Intestinal absorption of micro-nutrients plays crucial role in chicken due to its short Gastro-Intestinal Tract (GIT).

Retarded, low quality Myco-Toxin binders present in the feed would play a 'negative role' in binding and destroying vitamins indirectly as 'Vitamin Antagonists' and directly by binding them in the GIT.




Many studies have proved that Sulpha drugs interact with vitamins and can play anti-vitamin roles in GIT

Hence, its equally important to use a good quality toxin binder to get the best results out of vitamins and try to avoid using sulpha drugs unless it's very essential.

**Quality – The X factor**

Supplementing quality vitamins with consistency certainly can accelerate the farm economics at a regular phase.

**Conclusion**

With the above current factors, the equation of vitamins in the poultry feed needs a fresh approach today and this write up can be concluded with the following points.

- Less-nutritive micro-nutrients' are great biotech tools for healthy farming
- Composed vitamins the 'less-nutritive micro-nutrients' are more than feed supplements. They are great biotech tools for healthy farm economics
- Composition and the combination of vitamins are more decisive factors than the numbers of one or other vitamins
- Finally the 'composite vitamins' are more worthy and serious biotech tools than just glance them superficially as commodities of branded generics.

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# Heat Stress and Egg Shell Quality in Poultry

**Highlight Points**

This article is about stress factor in poultry and various clinical signs and pathology of heat stress in poultry, effect of heat stress on egg shell quality, temperature and humidity index in commercial poultry farms, prevention and control of heat stress in poultry. Also discussed about the recommendations for minimizing heat stress in commercial poultry farms in respect to maintain egg shell quality.

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**1. Introduction**

The Indian poultry industry is stretched in a wide range of agro-climatic conditions, from hot humid in the coastal region to extreme hot dry weather in central India. Many parts of the country experience temperatures of 35-43°C from February to July and it will extend to August also. The ideal environmental temperature for layers is between 13-23°C. In summer months, heat stress is commonly observed and requires due care to avoid loss in production and body weight. The heat stress ultimately releases corticosterone and reduces the efficiency of the flock. High temperature above 30°C in the poultry sheds creates problem in adjusting body temperature and ultimately disrupts the body output.

The laying hens are particularly susceptible to high temperatures accompanied by high humidity. As the birds lack sweat glands, the cooling process is by rapid respiration through open mouth. The reduced shell quality under heat stress, particularly in old layers increases the risk of egg shell breakage, contaminating the surrounding good quality eggs. The shelf-life of the eggs thus contaminated gets reduced due to physico-chemical and microbial changes besides lowering consumer acceptability.

**2. Clinical signs**

Growing birds show panting, drooping wings, prostration, reduced feed and increased water intake and poor growth.

There may be increased mortality, reduced egg production, egg weight, shell quality and poor shelf-life.In turkeys, heat stress is associated with high humidity or very low humidity on excessively hot days. The affected turkeys exhibit laboured breathing, excessive thirst, weakness, prostration, reduced growth and death.

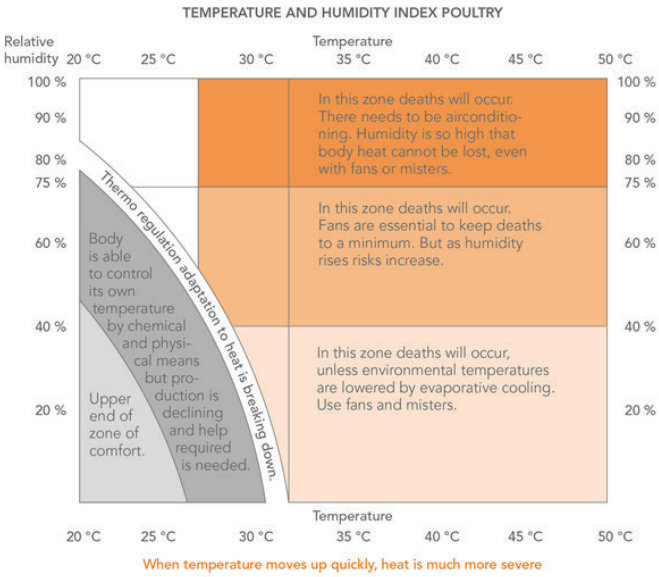
**3. Pathology**

On post-mortem, the affected birds exhibit haemorrhages on the abdominal fat. The breast muscles appear cooked or boiled up in appearance. The liver becomes fragile and fatty. Ovarian follicles are misshapen and haemorrhagic. General musculature appears dehydrated and shows congestion of viscera.

**4. Effect of heat stress on egg shell quality**

During heat stress calcium intake is reduced as a direct consequence of reduced feed intake and this stimulates bone resorption and resulting in hyperphosphatemia. This inhibits the formation of calcium carbonate in the shell gland of layers. Feeding the layers during morning makes the nutrients unavailable to the birds, particularly calcium for egg shell formation because the thermogenic effect of feeding will last longer at high temperatures compared to 20ºC. Calcium requirement of a laying hen is 4 - 6 times that of a non-laying hen. The egg enters the shell-gland region of the oviduct and uterus the uterus 19 hours prior to oviposition, and the shell does not store calcium ions to attach on protein matrix.During the last 15 hours of shell formation, calcium movement across the shell gland reaches a rate of 100-150 mg/hr. Normal blood calcium level is about 20 - 30 mg/dl with a normal layer ration of 3.56% calcium or higher, while layers on a 2% calcium diet, 30- 40% of the calcium is derived from bone. It is therefore important to have pullets, prior to lay, on a high level of calcium to store it on body. Intestinal absorption of calcium in the diet is about 40% when the shell gland is inactive, but reaches 72% when active. This time closely coincides with late afternoon or the dark hours for the layer. Hyperthermia in birds causes panting and respiratory alkalosis which leads to increased bicarbonate loss through the kidney, resulting in direct competition between kidney and uterus for bicarbonate ion, consequently egg shell thickness is reduced. The concentration of carbonic anhydrase activity is reduced in the uterus thereby the deposition of egg shell is impaired. Excess dietary chlorine decreases blood bicarbonate concentration which plays a pivotal role in egg shell calcification. Under heat stress more blood is shunted to the peripheral tissues with concomitant reduction to the internal organs including oviduct, resulting in poor shell quality and the ability to convert Vitamin D3 to its active forms is reduced in heat stress. Ascorbic acid is essential for synthesis of organic matrix of the egg shell. The capacity of birds to synthesize ascorbic acid is reduced during heat stress. Heat stress favours fat deposition which in turn further aggravates the ill effects of heat stress.

**Figure 01: Temperature and humidity index in Poultry**




When temperature moves up quickly, heat is much more severe

Heat stress in laying hens has a negative effect on egg efficiency, egg weight and egg quality traits. It is reported that there is a difference among lines in terms of tolerating the effect of heat stress and that it is necessary to evaluate the genetic differences with regard to the response against heat stress. Many studies have been carried out in order to decrease the effect of heat stress and to prevent the decrease in production traits. It is reported that egg production and feed consumption gradually decreased when the drinking water of hens in heat stress was added with NaCl by 0.2 or 0.4% during the study. However the production traits returned to normal after the stress period and that the egg production rate decreased in the control group with no supplementation. In another study, it was found that feed efficiency, egg production and Haugh unit values increased by adding vitamin E to the feeds of hens under stress. On the other hand, adding vitamin-E in different dosages to the diet has no positive effect on egg production. The addition of y-aminobutyric acid, aspirin and betain has been reported to increase or improve albumen height, Haugh unit, egg production, feed efficiency, shell weight and shell thickness or egg shell breaking strength during heat stress period.

**5. Prevention and control**

The ideal method to alleviate the ill-effect of heat stress would be to provide sufficient floor space. The birds should be fed in the morning and evening hours. The feed should not be given during the time of high temperature. There should be proper ventilation and provision of fans and coolers. Water must be always available in plenty. Feeding the birds during evening time will provide a uniform supply of calcium required for proper egg shell formation. Provide extra calcium to older hens at the rate of 1g/bird in summer months. Carbonated drinking water can reduce heat stress in poultry. Dietary supplement and/or water supplementation of bicarbonates (300-400g/100kg),Vitamin D3 or its metabolites and potassium salts improves the shell quality during heat stress. More fat should be included in the diet and Vitamins like Vitamin C,E,D, thiamine, riboflavin, pyridoxine, choline and cyanocobalamine and minerals and enzymes should

be extra supplemented in the feed.Levels of lysine and methionine should be increased in the feed. Debeaking and other managemental practices should be avoided in hot hours of day. Wetting the floors, walls, ceilings, and gunny bag curtains will reduce the temperature inside the poultry houses.The birds affected with heat stress should be dipped in water upto the level of neck and placed wet in front of a fan. Avoid direct sunrays in the shed when atmospheric temperature exceeds 30ºC. Provide glucose water to the chicks in stress condition.

**6. Recommendations for Minimizing Heat Stress in Caged Birds**

**a) Ventilation**

- Provide a minimum of 3.5 L/s (7 cfm) per bird of exhaust fan capacity. This may require two air changes per minute in a high-density cage house.
- Air inlets should be properly adjusted, especially when using baffle boards, to achieve a uniform flow of air throughout the length of the building. Buildings with more than three rows of cages require inlets on both sides.
- Assess air movement in the shed with the use of a static pressure monitor. Problem sheds should be smoke tested.
- Proper maintenance of exhaust fans requires inspection and cleaning of shutters, adjusting belts, and proper hood placement to protect against wind gusts. Baffles, intakes, thermostats, motors, shutters and hoods should be cleaned and adjusted on a regular basis. Up to a 50% loss of efficiency may result from poor maintenance of ventilation equipment.
- Check belt drive fans for belt alignment and correct belt tension. Both too much and too little tension can reduce fan performance and cause early belt failure. In addition, too much tension can cause bearing failure while too little tension can cause drive sheave failure.
- Stand-by generators and alarm systems should be properly maintained and tested monthly with results recorded in a log book.
- High-low temperature alarm systems should be set in the sensitive range so that the farm manager can react to elevated temperatures quickly.
- Foggers and misters properly installed and maintained could reduce losses due to heat stress provided air changes occur as described in text.
- Buildings should be properly insulated. New buildings should have R20 for walls and R28 for ceilings to reduce radiant heat gain.
- Provide screened or perforated soffits and ridge ventilators for attic ventilation.
- Grass and vegetation should be trimmed regularly especially on the air-inlet side of the building.
- Wide open doors and inlets will cause the static pressure (negative pressure) to drop, resulting in a loss of air speed. Air speed aids in heat loss through convection.

**b) Water**

- Monitor water consumption. Ten thousand birds in full production will consume 2,000 L per day during normal environmental temperatures.
- Above 32°C water consumption can increase up to 50%.
- Ensure that water pipes are properly sized to prevent water shortages bearing in mind peak demand.
- Water system management must ensure adequate pressure and volume of cool water throughout the length of the building.
- ressure regulators and water filters need to be serviced regularly.
- It is advisable to flush water lines prior to anticipated heat periods.
- Check water flow and temperature gauges at the far ends of the building during the warmest part of the day.
- Water treatment with polyphosphates and/or chlorine may be necessary to prevent build up of iron-mush bacteria and mineral deposits.
- In most cases, water quality has a greater effect on equipment then upon the direct health of the birds.

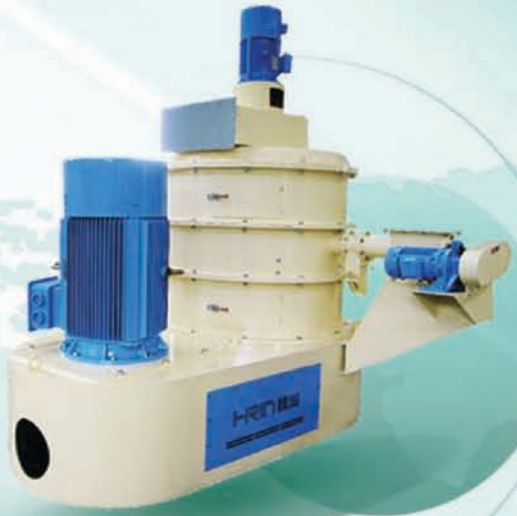
**c) Feed and Lighting**

- During hot weather it is extremely important to monitor feed consumption daily, to ensure an adequate intake of nutrients on a per bird basis.
- Feed consumption is particularly important for the 24 to 30 week old pullet.
- Special feed formulations adopted for summer feeding.
- Stirring existing feed within the trough by operating feed lines between feedings helps increase consumption.
- Running the feeders early in the morning will stimulate feed consumption during the cooler hours of the day.
- The lighting system time clocks should be set to come on in the early morning, cooler hours, i.e. before 6:00 a.m.

**d) Egg Quality**

- Eggs should be collected more often and cooled down immediately in a properly equipped egg storage room to maintain internal egg quality.
- Extra care should be taken in handling the eggs in hot weather, due to reduced shell quality.
- In shallow pit operations producing liquid manure, arrange clean-out immediately following egg pick up, to minimize the effect of splashing.

# Professional Feed Machinery Manufacturer



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