

Healthy poultry through adequate management and balanced nutrition

With the growing popularity of poultry meat around the world, poultry production is steadily on the increase. As a result, the food safety issue is receiving increased interest, as poultry health is closely related to human health.

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Treating birds with medication to combat diseases is of course not the answer to obtaining a good health status of flocks. Specifically this holds true for the use of antibiotics. In recent years the use of this way of medication has come under pressure, as it is well known that antibiotic resistance strongly influences human health.

The answer primarily lies in keeping pathogens away from the farm. That all starts with understanding the physiology of the bird, specifically its intestinal tract and immune system. And based on this knowledge, feed well balanced rations to birds in order to enhance their health status and thus let them be productive. Moreover, proper management of poultry, particularly under hot climate conditions, is also essential to having productive flocks.

A Phileo symposium on this theme, entitled 'Advanced pathogen and stress management in poultry production' was recently held in Sao Paulo, Brazil and attracted more than 150 attendees.

Here, experts from around the world and professional poultry producers gathered together to learn and share the latest views in this field with each other.

Good gut health

The first speaker was Professor Richard Ducatelle from Ghent University in Belgium. He addressed the audience with his presentation called "What is good gut health from microbiological and morphological views?"

According to professor Ducatelle, intestinal health is determined by several

factors, including feed composition, the intestinal barrier, and the microbiota. Since feed is one of the three factors involved, it is possible to influence intestinal health by modifying the feed formula.

Several substances that are present in feed have documented effects on intestinal health, either by directly acting on the intestinal barrier and the tight junctions, or indirectly by modifying the intestinal microbiota composition.

Influence of feed quality

"When designing feed for broilers, optimal intestinal conditions should be regarded as the highest priority," said nutrition consultant Gert Hemke from The Netherlands.

According to Hemke, the broiler's intestines enable the absorption of all essential nutrients on one hand and avoid the absorption of toxic and pathogen elements on the other. Also, the intestines form an important part of the immune system, since 65% of the immune system is concentrated in it.

When birds are born, their active immune system is not yet present. Intestinal bacterial flora is also absent, but within two days the intestines contain a large amount and big variety of micro-organisms. These bacteria are essential for the development of active immunity.

In recent years, feed formulation mainly focused on maximum growth. Since antibiotic usage should decrease, a balanced feeding of the intestines will become the new focus. This balance can be influenced by feed strategies, basic nutrients, ingredients, feed processing and additives.

Antibiotic free production

Dr Maarten de Gussem of Vetworks in Belgium zoomed in on the European approach of antibiotic free poultry production. "Pressure on antimicrobial use seems to be a challenge, but has already led to better understanding of why and when antimicrobials are used," he said. "In the end, reduction of use will be unavoidable,

but will not lead to production problems. On the contrary, it is expected that, especially in gut health, improvements that will be made to prevent the use of antibiotics, will lead to performance that better approaches the genetic potential that modern meat-type birds present."

Enhancing pathogen prevention

"Genetic evolution in poultry production has been tremendous in the past decades," said Dr Alain Riggi, Global Poultry Manager of Phileo Lesaffre Animal Care from France.

"In 1960, at 42 days of age, broilers were reaching 1.7kg of body weight. In 2013, at the same age, they were reaching 2.8kg. This selection was based on the growth rate, but also on the feed intake capacity of the birds. Objectives for layers for the coming years are moving towards 500 eggs at 100 weeks of age."

This evolution makes the birds more sensitive to disorders which can occur during a production cycle.

Depending on the circumstances, modifications in farm management and a good observation of the birds will help to limit the predisposing factors and the different stress which can occur during a production period. As certain safeguards are put into questions, like antibiotics, a yeast product like Safmannan, associated to good farm management and monitoring, can be a good alternative to help the birds grow in an optimal way.

Limiting the effects of heat stress

Dr Guillaume Tabouret of the INRA Institute in France addressed the effect of heat stress in chickens. "Stress is considered as a symptom resulting from exposure of an animal to a hostile environment," he said. "Physiologically, stress consists of external body forces that alter or disrupts homeostasis. To face this loss of homeostasis, many physiological adaptations are needed to cope with stressors. Both broilers and layers negatively respond to heat stress. Temperatures exceeding 35°C reduces

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nutrient intake. Consequently, heat stress seriously impacts production performances: in broilers to reduced protein production and increased fat deposition; in layer hens it reduces total egg production, egg mass and decreases egg shell resistance.”

Dr Tabouret stated that, due to global warming, it has become essential to define efficient strategies including zootechnical, nutritional or immunotherapeutic measures to limit heat stress.

Various management practices are currently available to deal with heat stress in poultry, said Dr José Arce Menocal, professor at the Michoacana de San Nicolás de Hidalgo University, Mexico.

Dr Menocal extensively covered this theme for both broilers and layers. In general, these practices can be applied to both types of birds, although their differences must be understood and measures applied accordingly.

The measures Dr Menocal addressed were: temporary feed restriction, using wet feed, using pellets rather than mash feed, exposing birds to high temperatures in the early stage of life, early age feed restriction, careful selection of medication, accurate water consumption and avoiding vaccination during extreme hot days.

When birds do not have enough space to spread the airflow around them, radiation is limited and heat loss is low. Thus, stocking

density must be low. Dr Menocal finally recommends avoiding catching, loading, and transportation of broilers during the hottest part of the day.

Managing oxidative stress

Poultry and poultry meat are susceptible to oxidative stress, states Dr Mario Estevez of the University of Extremadura, Spain. “The negative impact of stress on growth performance and food quality has been studied extensively in recent years.”

“Emerging muscle abnormalities related to fast growth, such as white striping and wooden breast, are related to this oxidative stress. Lipid oxidation has been recognised as a major threat to the quality of processed poultry products.

“Furthermore, there is growing awareness among consumers about the impact of diet and oxidation on health and age,” says Dr Estevez. Hence, antioxidant protection of poultry meat is unavoidable. Therefore, the application of phytochemicals and other microelements (Se, Cu, and Met) with antioxidant potential in animal feed, or directly in the meat product are significant.

Yeast fractions and selenium yeast

In addition to the range of strategies and solutions, discussed by the various speakers, Dr Alain Riggi of Phileo, zoomed in on the benefits of commercial yeast products specifically designed for animal feeds, like Safmannan. He summarised the effects of trials in this field and concluded that supplementation with Safmannan can help reduce the detrimental effects of chronic heat stress. This was endorsed by the corticosterone level, which is considered as an indicator of heat stress. Broilers supplemented with Safmannan presented lower serum corticosterone concentrations than birds that were grown without this yeast product.

Similar results were found with the use of Selenium yeast Selsaf. Various stressors like heat, diet, transportation etc can disturb the balance between the pro-oxidant and antioxidant systems, also known as oxidative stress.

Trials in both layer and broiler flocks, proved the benefits of feed additive Selsaf. Layers showed reduced mortality, as well as a better laying rate and FCR per egg, compared to the other Se sources.

Broilers demonstrated a higher body weight at 42 days of age (from 2.60kg to 2.74kg). Also the water holding capacity and tenderness of the meat were positively influenced.

In conclusion, Selsaf is a natural source of selenomethionine and selenocysteine, offering a dual protection against both oxidative stress for the animal, but also exhibits benefits for farmers and consumers. ■