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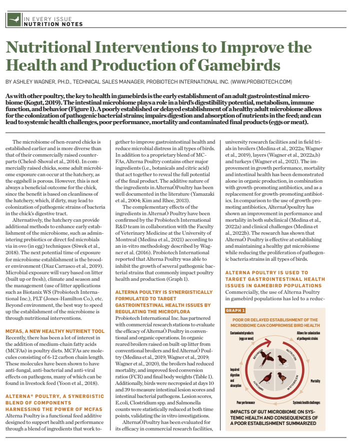

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NUTRITION NOTES

Nutritional Interventions to Improve the Health and Production of Gamebirds

BY ASHLEY WAGNER, PH.D., TECHNICAL SALES MANAGER, PROBIOTECH INTERNATIONAL INC. (WWW.PROBIOTECH.COM)

PROBIOTECH'S GAMEBIRD SOLUTIONS FEATURED ON NAGA NEWS MAGAZINE (JAN-FEB 2023)

"Nutritional Interventions to Improve the Health and Production of Gamebirds"

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Nutritional Interventions to Improve the Health and Production of Gamebirds

BY ASHLEY WAGNER, PH.D., TECHNICAL SALES MANAGER, PROBIOTECH INTERNATIONAL INC. (WWW.PROBIOTECH.COM)

As with other poultry, the key to health in gamebirds is the early establishment of an adult gastrointestinal microbiome (Kogut, 2019). The intestinal microbiome plays a role in a bird's digestibility potential, metabolism, immune function, and behavior (Figure 1). A poorly established or delayed establishment of a healthy adult microbiome allows for the colonization of pathogenic bacterial strains; impairs digestion and absorption of nutrients in the feed; and can lead to systemic health challenges, poor performance, mortality and contaminated final products (eggs or meat).

The microbiome of hen-reared chicks is established earlier and is more diverse than that of their commercially raised counterparts (Cheled-Shoval et al., 2014). In commercially raised chicks, some adult microbiome exposure can occur at the hatchery, as the eggshell is porous. However, this is not always a beneficial outcome for the chick, since the benefit is based on cleanliness of the hatchery, which, if dirty, may lead to colonization of pathogenic strains of bacteria in the chick's digestive tract.

Alternatively, the hatchery can provide additional methods to enhance early establishment of the microbiome, such as administering prebiotics or direct fed microbials via in ovo (in egg) techniques (Siwek et al., 2018). The next potential time of exposure for microbiome establishment is the brooder environment (Diaz Carrasco et al., 2019). Microbial exposure will vary based on litter (built up or fresh), climate and season and the management (use of litter applications such as Biotanix WS (Probiotech International Inc.), PLT (Jones-Hamilton Co.), etc. Beyond environment, the best way to speed up the establishment of the microbiome is through nutritional interventions.

MCFAS, A NEW HEALTHY NUTRIENT TOOL

Recently, there has been a lot of interest in the addition of medium-chain fatty acids (MCFAs) in poultry diets. MCFAs are molecules consisting of 6-12 carbon chain length. These molecules have been shown to have anti-fungal, anti-bacterial and anti-viral effects on pathogens, many of which can be found in livestock feed (Yoon et al., 2018).

ALTERNA® POULTRY, A SYNERGISTIC BLEND OF COMPONENTS HARNESSING THE POWER OF MCFAS

Alterna Poultry is a functional feed additive designed to support health and performance through a blend of ingredients that work together to improve gastrointestinal health and reduce microbial distress in all types of birds. In addition to a proprietary blend of MCFAs, Alterna Poultry contains other major ingredients (i.e., botanicals and citric acid) that act together to reveal the full potential of the final product. The additive nature of the ingredients in AlternaÒPoultry has been well documented in the literature (Yamazaki et al., 2004; Kim and Rhee, 2013).

The complementary effects of the ingredients in AlternaÒ Poultry have been confirmed by the Probiotech International R&D team in collaboration with the Faculty of Veterinary Medicine at the University of Montreal (Medina et al., 2021) according to an in-vitro methodology described by Wagner et al. (2016). Probiotech International reported that Alterna Poultry was able to inhibit the growth of several pathogenic bacterial strains that commonly impact poultry health and production (Graph 1).

ALTERNA POULTRY IS SYNERGISTICALLY FORMULATED TO TARGET GASTROINTESTINAL HEALTH ISSUES BY REGULATING THE MICROFLORA

Probiotech International Inc. has partnered with commercial research stations to evaluate the efficacy of AlternaÒ Poultry in conventional and organic operations. In organic reared broilers raised on built-up litter from conventional broilers and fed AlternaÒ Poultry (Medina et al., 2019; Wagner et al., 2019; Wagner et al., 2020), the broilers had reduced mortality, and improved feed conversion ratios (FCR) and final body weights (Table 1). Additionally, birds were necropsied at days 10 and 39 to measure intestinal lesion scores and intestinal bacterial pathogens. Lesion scores, E.coli, Clostridium spp. and Salmonella counts were statistically reduced at both time points, validating the in vitro investigations.

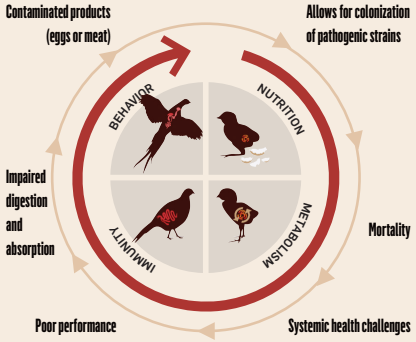
AlternaÒPoultry has been evaluated for its efficacy in commercial research facilities, university research facilities and in field trials in broilers (Medina et al., 2022a; Wagner et al., 2019), layers (Wagner et al., 2022a,b) and turkeys (Wagner et al., 2021). The improvement in growth performance, mortality and intestinal health has been demonstrated alone in organic production, in combination with growth-promoting antibiotics, and as a replacement for growth-promoting antibiotics. In comparison to the use of growth-promoting antibiotics, AlternaÒpoultry has shown an improvement in performance and mortality in both subclinical (Medina et al., 2022a) and clinical challenges (Medina et al., 2022b). The research has shown that AlternaÒ Poultry is effective at establishing and maintaining a healthy gut microbiome while reducing the proliferation of pathogenic bacteria strains in all types of birds.

ALTERNA POULTRY IS USED TO TARGET GASTROINTESTINAL HEALTH ISSUES IN GAMEBIRD POPULATIONS

Commercially, the use of Alterna Poultry in gamebird populations has led to a reduc-

GRAPH 1

POOR OR DELAYED ESTABLISHMENT OF THE MICROBIOME CAN COMPROMISE BIRD HEALTH



IMPACTS OF GUT MICROBIOME ON SYSTEMIC HEALTH AND CONSEQUENCES OF A POOR ESTABLISHMENT SUMMARIZED

tion in brooder mortality and an improvement in growth performance. Ken Nyhof and Rose Meengs — of Kenrose Game Birds LLC in Holland, Michigan — recently shared their observations about Alterna Poultry after using it for almost one year to support all their flocks:

PB (Probiotech International): Ken and Rose, what were some of the issues you were seeing that led you to try Alterna?

KR (Kenrose Game Birds): Prior to using Alterna, we saw more dead birds than we would like, our feed bills were high and we didn't see the expected return on feed intake we would like at the end of each growth cycle.

PB: Have you had experience with other gut health solutions?

KR: We have tried conventional antibiotics in the past. We found that using antibiotics just didn't produce birds that were at peak condition at the time of release. Also, the cost of the antibiotics and the need for a prescription from the vet led us to look for alternatives.

PB: How easy has it been to incorporate Alterna into your program?

KR: Very easy. Once we contacted Bill Achor at York Ag and decided to try it, we just add it to the feed and don't have to think about it again.

PB: What are the advantages you have seen since starting Alterna?

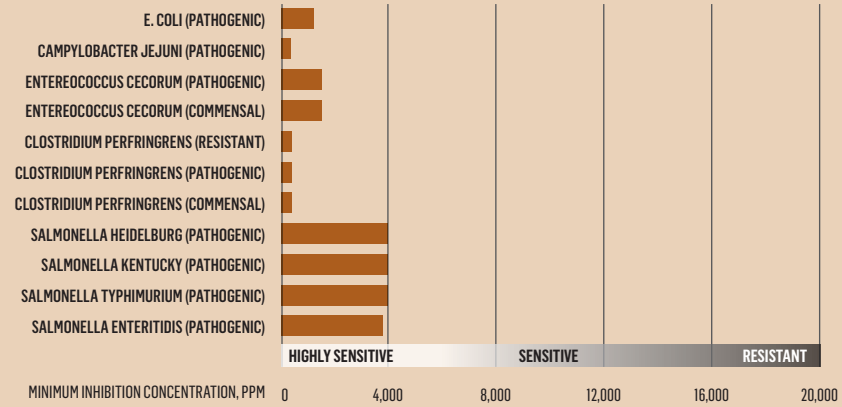
KR: We have seen fewer dead birds, our birds are more uniform when they are ready to sell and we have noticed they eat less feed while meeting the same growth targets.

PB: What is the one thing you would tell other producers if they asked you about Alterna?

KR: That's easy — give it a try and you will want to keep using it!

To learn more about Alterna Poultry and other alternative solutions, contact York Ag: *www.yorkag.com.*

MINIMUM INHIBITION CONCENTRATIONS OF PATHOGENIC BACTERIAL STRAINS THAT COMMONLY IMPACT POULTRY HEALTH BY ALTERNA POULTRY



Minimal inhibitory concentration (MIC) defines levels of susceptibility or resistance of specific bacterial strains to an applied substance. In this case, we were able to show that bacterial strains commonly impacting poultry health are unable to grow in the presence of AlternaÒ Poultry.

IMPROVEMENT IN GROWTH PERFORMANCE, MORTALITY AND INTESTINAL HEALTH HAS BEEN DEMONSTRATED WITH ALTERNAÒPOULTRY ALONE IN ORGANIC PRODUCTION, IN COMBINATION WITH GROWTH PROMOTING ANTIBIOTICS, AND AS A REPLACEMENT FOR GROWTH PROMOTING ANTIBIOTICS.

MEASURES	CONTROL	ALTERNA POULTRY OP
BIRDS, n	624	624
WEIGHT GAIN (0-10 DAYS), lb	0.483a	0.543b
FEED INTAKES (0-10 DAYS), lb/d/bird	.00536$_{a}$	0.0570^{b}
MORTALITY$_{\text{Starter Period}}$ %	3.21^{b}	0.48$_{a}$
WEIGHT GAIN (11-39 days), lb	4.82^{a}	5.01^{b}
FEED INTAKE (11-39 days), lb/d/bird	0.299^{b}	0.293^{a}
MORTALITY$_{\text{Grower/finisher Period}}$%	2.35^{b}	0.39^{a}
FINAL BODY WEIGHT, lb	2.35^{a}	0.39^{b}
FCR$_{\text{Overall}}$ CORRECTED	1.72^{b}	1.63^{a}
MORTALITY$_{\text{Overall}}$ %	5.56^{b}	0.87^{a}
FLOCK UNIFORMITY, %	84.11^{a}	87.85^{b}

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